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TABLE OF CONTENTS, PAGE II



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## Zooparasites in Relation to Production of Meat and Other Animal Products in Wartime

BENJAMIN SCHWARTZ, Ph.D.

Washington, D. C.

THE CLD adage that an army moves on its stomach, and the more recent one that food will win the war, merely serve to emphasize the importance of food production in wartime. Vast supplies of food are needed at this time (1) to keep in top shape the vigorous men who fight our battles; (2) to provide adequate and well-balanced diets for civilians, many of whom directly or indirectly forge the weapons of war or contribute in other ways to the war effort; and (3) to help feed the populations of the countries allied with us in the war, and the peoples of the countries that we liberate.

### HIGH WARTIME FOOD CONSUMPTION

The estimated meat consumption per capita by the civilian population of this country in 1942 was 20 lb. higher than during the prewar period, 1935-1939; the per capita civilian consumption of meat in 1943 was only 9 lb. less than the previous year, despite rationing and shortages. The rations for our armed forces are much higher, being about one and a half times the civilian consumption.

The total meat production in 1944, estimated on a dressed-weight basis, will probably exceed 25 billion pounds, and may be close to 25.5 billion pounds, according to an estimate made by the Bureau of Agricultural Economics, United States Department of Agriculture. This estimate is about

50 per cent higher than the average annual production of meat in the period, 1935-1939. The increased production of meat is reflected in an increased production of other animal products, especially leather and fiber, urgently needed in a war economy.

That our livestock growers and meat industry have met such unprecedented requirements for animal foods and other products, in the face of a labor shortage and other obstacles, is a tribute to their resourcefulness. It is, moreover, a tribute to livestock sanitarians whose labors over a period of several decades have so reduced the risks from diseases as to make such production possible. Since our entry into the war, and for some time prior thereto, this country has been free, for the most part, from serious epizoötics which have the potentialities of decimating the livestock population.

### ZOÖPARASITES, FACTORS IN LIVESTOCK PRODUCTION

Among the factors that militate against efficient and economical production of livestock and, therefore, of meat and other animal products, are zoöparasites—protozoa, helminths, and arthropods. Limiting factors in livestock production at all times, these organisms acquire a significance in wartime far beyond the mere monetary losses suffered by the livestock producers and the meat industry. The damage that parasites inflict results in death losses, especially of young animals; impairment of growth; decreased vigor; impairment of reproductive capacity; waste of food, es-

Prepared for presentation at a meeting of the American Society of Parasitologists held in Cleveland, Ohio, Sept. 11, 12, 1944.

The author is in charge of the Zoölogical Divi-

The author is in charge of the Zoölogical Division of the Bureau of Animal Industry, Agricultural Research Administration, U. S. Department of Agriculture, Washington, D. C.

feed shortages; enormous damage to hides; lowered production of fiber; decreased supplies of intestines for sausage casings and absorbable sutures; and other losses.

In peacetime, domestic shortages can be made up by importations, a procedure which is difficult and hazardous in time of war. It is imperative, therefore, in time of emergency such as this, to prevent, in so far as possible, the depredations of parasites that interfere seriously with maximum efficiency in the production of meat, fiber, and other animal products. Fortunately, animal research, conducted in peacetime in the laboratories of the U.S. Department of Agriculture, in those of the state agricultural experiment stations, and elsewhere, greatly accelerated since our entry into the war, has provided efficient chemical and other weapons to cope with many of the most damaging parasites that stand in the way of realizing essential goals in livestock production. That the offensive and defensive weapons developed through scientific research are being used to step up the production of livestock is amply attested by the increasing interest shown by our livestock producers in parasite prophylaxis and by the unprecedented marketing of drugs and chemicals developed by agricultural research workers for combating external and internal parasites of livestock and poultry.

### ROTENONE CONTROLS MANY ARTHROPOD PARASITES

Most species of arthropod parasites of livestock occur on the skin or in its layers; some species, however, occur in various locations within the body. Fortunately, some of the most devastating of the arthropod parasites, namely, mange or scab mites of sheep (Psoroptes), formerly widely prevalent in this country, are now confined largely to sheep in the Middlewest. Cattle scab mites (Psoroptes), also common at one time, have practically disappeared. The control of scabies in cattle and sheep is the result of systematic dipping carried out by the U.S. Bureau of Animal Industry in cooperation with the states.

Lice, demodectic mange mites, so-called sheep ticks or keds, ticks, cattle grubs, and other arthropod parasites, however, are still far too abundant, and constitute a drain on our meat, fiber, and bristle supply,

pecially serious in wartime in the face of now needed more than ever before. Aside from damaging the skin of their host, and causing loss of wool in sheep, of mohair in goats, and of plumage in fowl, lice, in common with other skin-inhabiting arthropods. produce more or less marked systemic effects because of the constant skin irritation which they set up. Moreover, the bites inflicted by sucking lice and ticks, and the lesions produced by demodectic mange mites, produce skin blemishes that spoil the appearance and quality of hides after they have been converted into leather.

By far the most damaging of the arthropod parasites, from the standpoint of leather production, are cattle grubs, the larvae of heelflies, (Hypoderma bovis and Hypoderma lineata) which, after spending about nine months in various locations in the bodies of cattle, migrate to the backs of their hosts and puncture the skin. After a period of development in subcutaneous cysts, during which they increase greatly in size, they drop out, pupate on the ground, and emerge from their pupal cases as flies. The adult flies deposit their eggs on the hair of cattle and thereby start their vicious annual cycle all over again.

About 35 per cent of all cattle hides in this country are classed as grubby by the tanneries, which means that they have more than five grub holes each. Hides having five or less grub holes are not classified as grubby. In addition to damaging hides -now urgently needed for shoes for our armed forces and for the civilian population, for belts for our war machines, for harnesses, and for other purposes—grubs are responsible for serious losses in meat. It has been estimated that in 1941 nearly 12 million pounds of beef were lost as a result of trimming of carcasses affected by grubs, but the poundage lost as a result of the annoyance to cattle from the flies, which causes diminished grazing, cannot be even roughly estimated.

Although there are a number of medicaments that are more or less effective in killing lice, sheep ticks, and cattle grubs, by far the most effective against these pests is rotenone, an insecticide contained in the roots of certain plants, chiefly Derris and Lonchocarpus, that occur, respectively, in the Far East and South America. The supply of rotenone-containing powder, known as derris, from British Malaya, the Netherlands East Indies, the Philippine Islands,

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and French Indo-China, has been cut off since our entry into the war, and that from South America, known as cubé, principally from Peru, Brazil, and Venezuela, is inadequate to meet our requirements. Despite the shortage, however, American livestock producers have been using more rotenone powder than heretofore, principally for the destruction of cattle grubs and, to a lesser extent, for the destruction of cattle lice. When applied to the backs of cattle as a powder mixed with an inert carrier, or when used in an aqueous suspension and applied as a wash or spray under high pressure, or as a dip, rotenone destroys a large percentage of the grubs in their subcutaneous cysts. The persistent use of rotenone as outlined, especially if carried out systematically, tends to reduce the adult population of heel flies from year to year, and may ultimately result in their complete eradication.

### PHENOTHIAZINE, CHIEF WEAPON AGAINST INTERNAL PARASITES

Phenothiazine, a synthetic organic chemical, prepared commercially by combining diphenylamine-a syntheti coal-tar product -with sulfur, under the influence of heat and a catalyst, was introduced as an anthelmintic by parasitologists of the U.S. Bureau of Animal Industry in 1938. First tested as a medicament for the removal of ascarids and nodule-producing worms (Oesophagostomum spp.) from swine, this chemical, now a recognized drug, and included in the National Formulary, has the greatest usefulness of any drug for the destruction of gastrointestinal parasites in domestic ruminants. Many cattle, sheep, and goats, especially when raised on farms rather than on the open range, suffer severely, when young, from infections with stomach worms (Haemonchus contortus, Ostertagia circumcincta, and Trichostrongylus axet in sheep and goats, and H. contortus, Ostertagia ostertagi, and T. axei in cattle); from species of intestinal bankrupt worms (Trichostrongylus), so-called in some English-speaking countries because of the observation that owners of domestic ruminants harboring these parasites are headed for bankruptcy; from hookworms (Bunostomum trigonocephalum in sheep and goats, and Bunostomum phlebotomum in cattle); and from nodule-producing worms (Oesophagostomum columbianum in sheep and goats, and Ostertagia radiatum in cattle). Against all the species mentioned, the drug phenothiazine has a destructive action, but against Haemonchus and Oesophagostomum spp., two of the most pathogenic groups, it is remarkably specific. This drug, moreover, has an extraordinary efficacy in destroying palisade worms (Strongylus spp.) and related nematodes (cylicostomes) in solipeds -parasites that produce anemia and accompanying debility, and other serious symptoms. Although phenothiazine is sometimes. but not too often, toxic to horses (not, however, to mules), its toxicity for these animals probably is not greater than that of oil of chenopodium, the only other drug of known marked efficacy against strongyles of horses and mules.

Phenothiazine also is used extensively as an ascaricide in swine and has the advantage of destroying a variable percentage of nodule-producing worms (Oesophagostomum dentatum and related species), against which there is no other known efficient anthelmintic. The drug is used widely by poultrymen to rid their flocks of cecal worms, nematodes that are known to serve as vectors of histomoniasis, or blackhead

disease of chickens and turkeys.

Considerable stunting among pigs in the Middlewest and in the South—the principal swine-producing areas of this country—is traceable to infection with ascarids acquired in the first few weeks of life. Swine ascarids are about as effectively controlled by phenothiazine as by oil of chenopodium, the latter drug not being readily available to swine producers at the present time. Moreover, much of the impairment of working efficiency in horses and mules used in farm operations and by the armed forces, is caused by palisade worms and related nematodes, against which phenothiazine has a specific action. In short, this drug, which can be easily administered in almost any manner that one chooses, and has value not only as a curative agent but also as a prophylactic, especially in sheep, is the greatest single weapon so far discovered for dealing effectively with a large array of nematodes that prey upon animals raised for meat and upon those used for power on the farm and range.

## HEXACHLORETHANE, FOR CONTROL OF LIVER FLUKES

Liver flukes (Fasciola hepatica) are the most pathogenic of the trematodes that affect our livestock. Ruminants, in particular, are susceptible to liver flukes and ac-

quire them, often in large numbers, when these animals graze on low, wet pastures that harbor certain species of lymnaeid snails that serve as intermediate hosts. Aside from the loss of livers, which are condemned under federal and other equally competent meat inspection because of the presence in them of the flukes or of lesions produced by the flukes, these parasites cause death, especially in sheep, unthriftiness with loss of flesh in all domestic ruminants. impairment of reproductive capacity in cattle, reduction of milk flow, and other injuries. Of the losses produced, only those resulting in the condemnation of livers for food or for medicinal use are more or less perfectly known. Based on figures obtained from meat-slaughtering establishments operating under government inspection, it was determined that the average annual infection of cattle with liver flukes in the Gulf Coast area is 37.5 per cent in adult cattle and 6 per cent in calves. According to Olsen,1 the average weight of cattle livers in the Gulf Coast area is about 8 1/4 lb., and that of calf livers about 3 1/3 lb. The loss of beef and calf livers in this country must be enormous, in view of the prevalence of flukes in cattle in parts of the South, the Southwest, the Rocky Mountain States, and Pacific Coast States—areas with large cattle populations, for the most part. Olsen determined that 88,500 lb. of beef and calf livers were lost annually in an eleven-year period, 1931-1942, in only four meat-slaughtering establishments in the Gulf Coast

As a result of investigations conducted in the U.S. Bureau of Animal Industry, an effective treatment for the destruction of flukes in the bile ducts of cattle has been developed and was announced in June, 1943. The medication, which is already in commercial production, is a chlorinated hydrocarbon, hexachlorethane, combined with a wetting agent, bentonite, and a small quantity of white flour, to form a stable suspension in water. Administered as a drench to cattle, this medication kills on an average of more than 90 per cent of the liver flukes present and nearly 99 per cent of the adult drug. Although the damage already done

parasites, the immature and young mature flukes being more or less resistant to the

### SANITATION, AN ADJUNCT TO CHEMOTHERAPY

Although the use of drugs to destroy parasites appeals to many stockmen as an easy way out of the difficult situation, the fact remains that chemotherapy alone is only a temporary expedient, at best, unless coupled with sound sanitary practices to prevent reinfection. Such practices have been developed by agricultural parasitologists, and are being used extensively in many parts of this country for the protection against excessive parasitism of meat-producing and other farm animals. Essentially, the measures involve the breaking of weak links in the chain of biological events that constitute the life cycle of zoöparasites, or in the application of control measures of kinds that circumvent their acquisition. Perhaps the most extensive use of parasite prophylaxis is in connection with swine production, which reached an alltime record in 1943. slaughter of pigs in that year is estimated at over 95 million, a figure which may be exceeded in 1944 by 5 million or more.

The swine-parasite control system, which has become a standard practice in many parts of the country, especially in the Corn Belt, was developed primarily to control ascarids, and is based on the known facts in the life cycle of Ascaris lumbricoides. Briefly, it involves the protection of pigs from infective ascarid eggs during the first few weeks of their life, a period when these animals are most susceptible to these parasites and suffer more from their extensive migrations through the liver and lungs, than later on. In practice, it requires the removal of dirt-probably containing numerous worm eggs-that clings to sows, especially around the udders; thorough cleansing and disinfecting of farrowing houses; and maintaining the sows and their pigs on clean, temporary pastures, and away from older pigs that are probably parasitized with acarids, the most ubiquitous of the zoöparasites.

Developed during and shortly after the last world war by parasitologists of the U. S. Bureau of Animal Industry for the

to the parasitized livers cannot be repaired by the removal of the parasite, the treatment has the advantage of eliminating the parasites that discharge the eggs, which, in turn, initiate the life cycle.

<sup>&</sup>lt;sup>3</sup>Olsen, Wilford O.: Liver Flukes in Cattle and How to Control Them by Medication (Processed article issued by U. S. Bureau of Animal Industry, November 1944).

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control of ascariasis, the system of management just outlined is also effective for the control of some other diseases acquired by hogs in old lots. Among the diseases controlled by this system of management are various forms of diarrhea, mange, as well as disease conditions produced by nematodes other than ascarids. A modification of this system to meet swine husbandry practices in the South goes a long way towards reducing losses that result from infection with kidney worms (Stephanurus dentatus), parasites that invade the kidneys, perirenal fat, psoas muscles, liver, blood vessels, and other organs, and produce, at times, such generalized parasitic infection, accompanied by pus formation, that entire affected carcasses are condemned as unfit for food.

### SUMMARY

Summarizing this rather incomplete review of the rôle of zoöparasites in the economy of production of meat, fiber, and other animal products, it is quite evident that uncontrolled parasitism is a serious obstacle to livestock production. Parasites are vulnerable, however, to weapons that have been formed to combat them.

When strategically employed, rotenone is deadly to some of the most injurious of the external parasites, and phenothiazine is equally destructive to internal parasites, despite their entrenched positions. A hexachlorethane suspension, developed recently, can reduce what appears to be an impregnable defense system of liver flukes in cattle.

The destruction of these livestock enemies with the weapons named must be followed, however, by the erection of formidable barriers against the repetition of frontal assaults and sneak attacks by zoöparasites, in the interest of enduring livestock health. Formidable barriers against some of these aggressors have been erected or are already in the process of construction. Others, undoubtedly, can be devised through continued investigations of the biology of zoöparasites and their susceptibility to drugs and improved husbandry practices.

During February, the American Milk Goat Record Association registered 300 animals. Purebred animals predominate, as the tabulation shows: Toggenburg, 72, Saanen 68, Alpine 63, Nubian 58, Swiss Alpine 12, grades 27.

## Army Medical Library Requirements for Requests for Service

The microfilm copying service of the Army Medical Library is concerned chiefly with the dissemination of literature in the library's collection. Upon request, single articles are copied from periodicals and other publications. Through this medium, the resources of the greatest medical library in the country are brought to any scientist, regardless of geographical location.

The popularity of this service has resulted in the need for certain requirements for making requests. Briefly stated they

- 1) Not over 15 references should be sent in at one time. A new list may be sent as each previous list is received in film form by the person requesting. This will enable us to provide better service to more people and to expedite the filming. Long lists inevitably retard the assembling of the items requested, each of which must be carefully checked by the reference staff, already overburdened by other war demands.
- All requests must be in duplicate. The duplicate copy is used for a reply to indicate material not available.
- 3) All references should be numbered in the order in which they appear on your list and arranged alphabetically under the title of the publication. A reference should be given thus: title of publication, volume, complete pagination and year, author's full name and title of article. It is preferred that the title of the publication be listed on a separate line similar to the examples given below:
  - American Heart Journal 10:1-10, 1944.
     Jones, A.A., Sulfanilamide.
  - American Medical Association Journal 125:1-10, 1944. Smith, S. Vitamin C. Studies.
  - Johns Hopkins Hospital, Bulletin 74: 161-176. Bing, R. J. Hemoglobin and Renal Functions.

While not required, it is helpful, when the reference is taken from the *Current List of Medical Literature*, if the date, column, and alphabetical section from which the item is taken, is given.

The number of horses on American farms has declined from 9,675,000 to 8,897,000 from 1943 to 1945, and the average value per head dropped from \$80.00 to \$64.80. Of colts under 1 year old, there has been a decline of 12 per cent.—From The Cattleman.

# Proteins and Vitamins in Relation to Nutritional Deficiencies of Mother's Milk

MARK L. MORRIS, B.S., D.V.M., FRANK I. NAKAMURA, Ph.D., and LEROY NICHOLS ATKINSON, D.V.M.

New Brunswick, New Jersey

THE MORTALITY in animals from birth to weaning is high and, unquestionably, constitutes a major loss in animal production. If a percentage of this loss could be prevented during this critical period, the profits of livestock owners would be increased, more food would be produced, less feed stuffs would be wasted, and practice for the veterinarian would be simplified. Therefore, a real contribution can be made to the food and feed problems of this country if veterinarians will encourage and help animal owners to reduce this death loss to a minimum. It can be done through proper feeding, sanitation, and disease control. Consideration will be given in this paper to proteins and vitamins in relation to deficiencies of mother's milk.

For several years, the Committee on Foods has been testing dog foods, using dogs as test animals. It has been learned that various rations can be fed, unsupplemented, to an adult dog for many months with satisfactory results. The same rations, when fed to pregnant animals, were found nutritionally adequate, and the females gave birth to apparently normal young. However, if these females were continued on these same diets, unsupplemented during lactation, difficulties were frequently encountered. Often, the pups grew well and appeared normal for one to four weeks. Then growth stopped; the suckling pups became weak and dehydrated, and died. A clinical examination of the bitch revealed she was in good physical condition; there was no evidence of parasitism or bacterial infection, and the breasts were well filled with milk. Suspecting a nutritional deficiency, attention was directed to the quantity and quality of protein in the ration. In feeding trials, rations which had failed to provide adequately for lactation were supplemented

with 2.5 oz. of commercial casein (85% protein) per dog per day. When this failed and the young pups still died, it was decided to inaugurate methods to evaluate the biologic value of the proteins in the foods.

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#### EVALUATION METHODS

The method of Karl Thomas' and H. H. Mitchell,2.3 adapted to the dog, was used. The procedure was first employed by Allison and Anderson' and found applicable for this purpose. The method in detail will be published by them elsewhere. The procedure was briefly as follows: Four mature, healthy female dogs of different types were selected (fig. 1). To prepare the animals, a ration containing 15.0 per cent protein was fed for two or three weeks (table 1). The dogs were then placed in individual metabolism cages (fig. 2) and were fed, for four days, a ration of which 9.0 per cent of the total calories was derived from the protein in the diet (table 2). They were then changed to a protein-free diet for eight days, the feces and urine being collected on the last four days (table 3). The purpose was to determine the endogenous nitrogen in the urine and the metabolic nitrogen in the feces. Next, the ration to be tested was fed for four days, during which time the urine and feces were again collected. A test ration was prepared by diluting the dog food with sucrose to a level of 9.0 per cent protein calories. Both nitrogen-free and test diets were adjusted to contain all essential nutrients.

Ferric oxide was fed as a feces marker at the beginning and the end of the experimental periods to separate feces of one period from those of another. The dogs were given sufficient food to maintain body weight during the test period; the energy-intake varied from 90 to 125 calories per kilogram per day. The food eaten and the excreta (feces and urine) were analyzed for nitrogen, using the standard method. By employing the data obtained on the endogenous nitrogen in the urine and the metabolic nitrogen in the feces, it was possible to determine the amount of nitrogen (protein) digested and absorbed into the system and utilized for body functions.

The biologic value of the proteins thus determined was that part of absorbed nitrogen

Presented before the eighty-first annual meeting of the American Veterinary Medical Association, Chicago, Aug. 22-24, 1944.

(protein) which was utilized for the body functions. This, however, does not give the true picture of the quality of the proteins in

TÂBLE I-Maintenance Ration for Dogs on Protein
Assay

Wheat feed	1	pı	10	od	lu	10	t	3			*		*							*			*	63.0	per	cent
Oat meal			9	0				0			0					0			0					15.0	per	cent
Corn meal .	0			0	0	0	٠	0	0						0	0					0			18.5	per	cent
Calcite			9			0		0		0					0	0		0						2.16	per	cent
Salt								0		0		0	0	0	0	0		0	0			9	0	1.2	per	cent
Fish oil	0	0			0	0		0.	0	0		0		0	0	0	0	0	0				0	0.14	per	cent

This formula is designated as E.R. 2 Base.

the test ration. The method as outlined tells only to what extent digested or absorbed nitrogen can be utilized. There are other sources of wastage of dietary nitrogen, e.g., that lost in the process of digestion. Using the coefficient of apparent digestibility and the

TABLE 2—Standardizing Ration for Dogs on Protein
Assav

Casein																			12.74	per	cent
Sucrose				*		*				*	*		×				×		29.27	per	cent
Dextrose						0	0			0	0	0	0	0	0	0			32.30	per	cent
Lard				*	*	*			8		×	×		*	*		*	*	21.48	per	cent
Wesson salt	n	<b>kin</b>	٤.		0					0	0	0	0	0		0	0		1.81	per	cent
Cellu flour					D		0	0 0			0			0		0	0		2.41	per	cent

16.56 Gm. of this mixture will provide 80.00 calories.

biologic value of proteins as determined previously, it is possible to compute what is known as the net protein value of the ration. This gives the percentage of food proteins utilized. Thus the protein value is measured

TABLE 3—Protein-Free Ration for Dogs on Protein

Cellu flo																	
Sucrose																	
Glucose																	
Lard																	
Wesson	sa.	lt	1	m	ix										2.13	per	cent

in terms of the animal's ability to utilize the dietary proteins (table 4).

For example, a certain dog food (product B-6) gave the following results: protein in the food, 24.2 per cent; apparent digestibility, 71.4 per cent; biologic value of the protein in the food, 81.2 per cent. By using these values, it is possible to compute the net protein value of

this dog food, which in this instance amounted to 58.0 per cent. This means that 58.0 per cent of the dietary proteins are actually utilized for body functions, the rest being lost in digestion and metabolism. Proteins of poor quality not only fail to meet the needs of the body but cause a destruction of tissue. Thus, by the method outlined, it is possible to evaluate the protein quality of a dog food in terms of the animal's ability to utilize it for body maintenance.

The data in table 4 show that 24.0 to 36.0

TABLE 5—Effect of Liver Extract on Hemoglobin and Red Blood Cells of Suckling Pups

	2	02	2	04		206
DATE	Нв.	R.B.C.	HB.	R.B.C.	Нв.	R.B.C.
2-7-44	8.5	2.80	7.5	1.52	8.5	2.70
2-11-44	9.5	3.34	8.0	2.40	8.5	3.09
2-18-44	9.0	4.13	8.0	3.14	8.5	3.58
2-24-44	9.0	3.73	8.5	3,66	8.5	3.46
3-2-44*	8.5	3.79	8.5	3.52	8.5	3.51
3-9-44	12.0	4.11	10.0	3.29	12.0	3.76
3-16-44	10.5	5.49	8.5	3.31	9.0	3.65
3-23-44	10.0	3.94	10.0	3.48	10.0	3.40
3-30-44	10.5	3.79	10.5	4.26	11.5	4.22
4-6-44	13.0	5.30	10.0	4.72	11.0	4.40

0.2 cc. liver extract was injected, subcutaneously, twice a week.

\*Liver extract discontinued.

Controls

	2	01	2	03	1	205
DATE	Нв.	R.B.C.	HB.	R.B.C.	HB.	R.B.C.
2-6-44					(	lied
2-7-44	8.0	2.84	8.5	3.29		
2-9-44	die	ed				
2-11-44			- d	ied		

Hb. = Gm. per 100 cc.; R.B.C. = million per cmm.

per cent of the dietary protein is lost during digestion and 18.0 to 74.0 per cent of absorbed protein is wasted during metabolism. The column titled "Net Protein Value" indicates the quality rating of the proteins in the rations. It should be noted that, in the case of commercial rations, from 17.0 to 58.0 per cent of the dietary protein is utilized for maintenance. This gives some idea of the relative value of protein used in commercial dog foods and a ration containing casein having a net protein value of 67.0 per cent.

Dog food A-10, according to the label, contained 24.0 per cent crude protein. On analysis,

TABLE 4— Protein Values of Dog Foods for Maintenance (level of protein feeding, 9% protein calories)

	PROTEIN	DIGEST	IBILITY	Biologic	NET PROTEIN
RATION	CONTENT %	APPARENT	TRUE	VALUE	VALUE
A-10	20.0	64.4	73.8	25.9	16.9
B- 6	24.2	71.4	77.8	81.2	58.0
C- 1	23.4	69.5	74.6	82.3	57.0
D- 5	23.8	76.2	81.2	71.1	54.2
Casein ration	11.2	92.1	99.0	72.9	67.0

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however, it was found to contain 20.0 per cent and of this amount 17.0 per cent could actually be utilized. Thus a dog would eat 100 lb. of this product to obtain 3.5 lb. of utilizable protein.\* With food B-6, however, also labelled to contain 24.0 per cent protein, the dog would obtain 14 lb. of utilizable protein from 100 lb. of the ration.

TABLE 6—Blood Picture on Dog 139 Receiving Injections of Liver Extract During Gestation and Lactation

DATE	HR. GM. PER 100 CC.	R.B.C. MILLION PER CMM.
2-14-44	14.0	5.28
2-25-44	14.5	5.46*
3-3-44	14.0	5.66
3-10-44	13.0	4.68
3-17-44	12.0	4.36
3-24-44	12.0	4.21
3-31-44	13.0	4.39
4-12-44	11.0	3.74 whelped
5-8-44	14.0	4.60†
5-13-44	13.0	4.00
5-15-44	13.5	4.11
5-22-44	12.0	4.64

\*0.5 cc. liver extract, subcutaneously.

Hb. = Gm. per 100 cc.; R.B.C. = million per cmm.

The biologic value thus obtained for maintenance of adult animals will not apply for other functions such as growth or reproduction. On the basis of present experience, dog foods having a net protein value of 50.0 per cent or above may be considered as having adequate good quality protein not only for maintenance but also for growth and reproduction.

These data illustrate the fallacy of veterinarians and animal owners judging the quality of a ration by the amount of crude protein reported on the label.

### REQUIREMENTS FOR GESTATION

To determine all of the nutritive requirements of the pregnant animal presents a difficult problem. During the gestation period, the developing embryo gradually draws upon the body stores of the mother for necessary nutrients. Animals frequently give birth to normal young after subsisting on essentially a maintenance ration during the gestation period. In such instances, the mother goes into lactation with her body reserves depleted and the nutritional deficiency frequently manifests itself at this time. Veterinarians and livestock owners will recall that range cattle frequently winter on straw, poor quality hay,

or other roughage. In the spring, these animals commonly give birth to fully developed healthy offspring. If good green pasture is available, the young usually survive and grow well. If, however, the same poor quality ration is continued, nutritional diseases may soon appear in the suckling young.

### REQUIREMENTS FOR LACTATION

The adequate feeding of the female animal nursing her young is a more complicated and difficult problem. Milk contains both casein and lactalbumin-proteins having good biologic value. It seems reasonable that, if an animal is to secrete sufficient amounts of protein of this quality in her milk, correspondingly good protein must be included in the diet. When death losses occurred in suckling pups and the bitch was receiving a ration believed to contain good quality protein, it was reasoned that possibly the proteins in the ration might be deficient in one or more of the amino acids. Accordingly, supplements of high quality protein such as casein fortified with methionine or poultry offal were tried, but death losses among the suckling young still occurred (fig. 3).

Next, it was decided to undertake blood studies on suckling pups in which growth

TABLE 7—Average Blood Picture of Suckling Pups 223-224-225-226-227

AGE DAYS	HB.*	R.B.C.
3	13.6	3.4
10	10.7	3.3
17	9.1	2.8
24	8.5	2.7
31	8.2	2.4
38	7.6	2.5
45	Less than 7.5	2.5

•Grams per 100 cc. †Million per cmm.

failure was evident and death impending. The blood counts on such animals appeared low in both red blood cells and hemoglobin (1.5 to 2.8 million red cells, 7 to 8 Gm. of hemoglobin). Unfortunately, the literature contains only fragmentary information on the blood picture of the normal nursing female and suckling pup. It was decided, therefore, that this blood picture on suckling pups was pathologic, and liver extract therapy was inaugurated. In a litter of 6 pups, of which 1 had died, 2 were nearly dead, and 3 were in critical condition, 3 were treated with subcutaneous injections

<sup>\*</sup>Such products cannot meet the standards of the Committee on Foods of the A.V.M.A. and A.A.H.A.





Fig. I-Type of mature dog used for protein assay.

of 0.2 cc. liver extract (Abbott). The response was prompt. Within forty-eight hours, the clinical appearance of the 3 treated pups improved (fig. 4, 5, 6) and the 2 untreated pups suckling the same mother died (table 5). Blood counts on the fourth and eleventh day after treatment showed an increase in both red cells and hemoglobin. This striking response suggested the possibility that the liver extract contained factor(s), possibly members of the B, complex, known to have hematopoietic activity.\*

Immediately, a number of questions came to mind, e.g., does the same loss occur for the same reason in species other than the dog? An investigation revealed that a number of studies are in progress which attempt to solve similar death loss problems in swine, cattle, fox, and sheep, as well as in human beings (see J.A.V.M.A., August, 1944). Is this death loss in suckling young a condition associated with improper functioning of the mammary gland or is it a lack of certain nutrients in the diet of the mother that results in the secretion of defi-



Fig. 2-Dog in metabolism cage on protein assay.

cient milk? On the basis of present information, the possibility of an endocrine disturbance seems quite remote. would have occurred had the liver extract been given hypodermically to the bitch rather than to the pups? Would the factor(s) have been secreted in the milk and

\*The existence of hematopoietic factors in liver extracts is well known.

Since the literature on this subject is extensive, review is being omitted.

TABLE 8-Effect of Liver Extract upon Hemoglobin and Red Blood Cells of Anemic Pups (female 207 litter 2)

	20	8	2	09	2	210	2	11	2	12		213
DATE	Нв	R.B.C.	HB.	R.B.C.	Нв.	R.B.C.	HB.	R.B.C.	HB.	R.B.C.	Нв.	R.B.C.
3-8-44	17.0	4.39	16.0	5.07	17.0	5,96	16.0	4.84	16.0	3.41	16.0	4.91
3-15-44	13.0	4.44	13.0	4.24	13.0	4.50	13.0	4.01	12.0	3.80	13.0	3,56
3-22-44	10.0	2.81	11.0	3.61	11.0	3.54	10.0	2.89	10.0	3.01	10.0	3.02
3-25-44	10.0	2.66	10.5	3.55	9.5	3.39	11.0	3.06	11.0	3.20	11.0	3.14
	Liver	extract	(injec	etion)		Cont	rol		Live	extract	(by 1	mouth)
3-31-44	9.0	3.35	10.0	3.34	10.0	3.16	10.5	3.02	10.5	3.81	12.0	3.82
4-7-448	10.5	3.50	10.0	3.65	10.0	3.27	10.0	3.20	10.5	4.33	10.5	4.08
4-14-44	8.0	3.10	9.0	3.64	9.0	3.15	9.5	2.70	9.0	3.54	10.5	4.07
4-21-44	8.5	2.94	9.5	3.55	9.0	3.00	9.0	2.76	9.0	3.06	10.0	3.73
4-27-44	8.0	2.86	9.0	3.36	9.0	3.35						
5-4-444	9.5	3.53	10.0	3.99	11.0	3.93						

<sup>&</sup>lt;sup>1</sup>Hb. = Gm. per 100 cc.; R.B.C. = million per cmm.

<sup>&</sup>lt;sup>2</sup>5 times the injected amount.

Lot B liver extract — dosage doubled. 40.3 cc. lot A liver extract twice a week.

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Fig. 3—Deficient pups (22, 24, 26) prior to death, litter of 6, 3 dead.



Fig. 4—Pups 202, 204, 206 forty-eight hours after treatment with liver extract.

have given the same response in the pups? This we proceeded to determine.

A wire-haired mongrel female (139), 2 years old, having been on a diet for thirtytwo weeks which was known to be deficient for lactation, was started on 0.5 cc. liver extract (Abbott) one week prior to breeding. The same dose of liver extract was administered subcutaneously twice a week during the gestation period. Examination of the blood record on this female at the time of breeding indicated she had a blood hemoglobin of 14 Gm. per 100 cc. and 5.3 million red blood cells per cmm. During the gestation period, both hemoglobin and red cells declined. This decline, however, may be attributed to the use of a liver extract which, in other tests, failed to give a hematopoietic response in anemic pups. One week before whelping, this bitch had a blood hemoglobin of 11 Gm. and a red cell count of 3.7 million. A new lot of liver ex-

tract raised the level of hemoglobin and red cells. The dosage of liver extract, however, was increased from 0.5 cc. to 1.0 cc. twice a week during lactation to meet the needs of the suckling pups. The levels of hemoglobin and red blood cells in the blood of the bitch were maintained above 12 Gm. and 4.0 millions, respectively, during the lactation period (table 6, fig. 7). The influence of the liver injections on the mother was followed by observing the clinical condition, growth, and blood picture of the suckling pups. Of the 5 pups whelped, this female weaned the entire litter. It should be noted that, at the age of 4 weeks, the average hemoglobin was 8.2 Gm. and the average red blood cells 2.5 million (table 7). These pups were weaned to the same ration fed the mother and have developed in a reasonably satisfactory manner (fig. 8). This observation suggested that probably the bitch could secrete the factor(s) in her

TABLE 9—Effects of Liver Extract, Lactobacillus Casei Factor, and Pyridoxine upon Hemoglobin and Red Blood
Cells of Anemic Pups<sup>1</sup> (bitch 214 litter 3)

	2	15	2	18	2	217	2	19	2	16		220
DATE	HB	R.B.C.	HB.	R.B.C.	HB.	R.B.C.	Нв.	R.B.C.	HB.	R.B.C.	Нв.	R.B.C
3-21-44	15.0	4.39	15.0	4.30	15.0	4.54	15.0	4.02	14.0	4.34	15.0	5.18
3-21-44	11.0	3.31	10.0	3.48	9.5	3.34	11.0	3.51	10.0	2.80	8.5	
3-28-44	9.0	2.66	12.0	3.06	10.0	3.04	9,5	2.88	10.0	3.31	9.5	
4-4-44	7.5	2.48	17.0	3.81	9.5	3.20	8.5	2.77	7.5	1.95	7.5	
		Liver e	extract			Cor	itrol			obacillus		factor
4-11-44	8.5	2.90	10.0	3.33	9.0	3.04	9.5	2.85	10.5	3.50	9.5	3.22
4-18-443	9.0	3.42	11.0	3.64	11.0	3.19	9.5	2.87	10.0	3.66	10.0	
4-25-44	8.5	3.95	9.0	3.69	8.0	2.93	9.0	3.16	8.5	3.98	9.5	
4-29-44					8.0	2.79	9.0	3.16		1		-
						Pyrid						
5-2-44					9.0	3.67	9.0	3.85				
5-6-44					9.5	4.02	10.5	4.46				
5-8-44					10.0	4.35	9.5	4.08				

<sup>1</sup>Hb. = Gm. per 100 cc.; R.B.C. = million per cmm.

Lactobacillus casei factor preparation: 26 mg. per cc. (material and analysis supplied by Merck & Co.).

Dosage doubled on Lot B liver extract.

milk if they were administered subcutaneously in the form of liver extract.

To continue the work it was necessary to replenish the supply of liver extract. The same product (Abbott) was ordered but it was labelled with a different code number. This liver extract was designated lot B, and the results obtained are illustrated in the case of female 207 and litter 2 (table 8).

Examination of the blood picture of a litter of suckling Terrier pups (female 207 table 8) demonstrates that, following birth, a decline occurs in both red blood cells and hemoglobin.

At the end of the third week, the red cell count varied from 2.66 to 3.55 million and



Fig. 5-Two untreated pups (201, 205) before death.

the amount of hemoglobin varied from 9.5 to 11.0 Gm. At this point, liver extract therapy was inaugurated. Pups 208 and 209 received 0.2 cc. lot A liver extract twice weekly. Pups 212 and 213 received 1.0 cc. liver extract by mouth twice weekly, and pups 210 and 211 were untreated as controls. The hematopoietic response was satisfactory. After two weeks of treatment, it became necessary to substitute lot B for lot A liver extract. The same dosage was continued for one week and then doubled for two weeks but no response was demonstrated. The twice weekly subcutaneous injection, at this point, of 0.3 cc. of the original lot A liver extract to pups 208, 209, 210, produced a response with an increase in both red blood cells and hemoglobin.

Evidence that two lots of liver extract from the same producer did not contain the same factor(s) certainly complicates the problem.

If the specific factor(s) responsible for the death loss in suckling young could be identified and included in the ration of the mother, either from natural ingredients or synthetic sources, the feeding of the lactating female would be simplified and improved.

Accordingly, some studies have been made toward identification of the factor(s) required. The result of such a study is summarized for litter 3 (table 9). Both the hemoglobin and red blood cells declined rapidly after birth and at the end of the third week the red blood cell count varied from 1.95 to 3.81 million per cmm. and the hemoglobin from 7.5 to 9.5 Gm. per 100 cc. At this point, liver extract—Lactobacillus casei factor therapy was initiated. Pups 215 and 218 received 0.2 cc. of lot B liver extract twice a week. Pups 216 and 220 re-

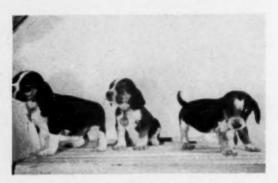


Fig. 6—Pups 202, 204, 206, twenty-five days after receiving liver extract.

ceived 0.2 cc., twice a week, of a preparation of L. casei factor containing 26 µg folic acid per cc. Pups 217 and 219 were untreated as controls. A week later, the dosage of liver extract was doubled. The response to liver extract was unsatisfactory, while the response to the L. casei factor was pronounced. At the end of the sixth week, the red blood cells of the control animals averaged about 3 million per cmm. and the hemoglobin was less than 9 Gm. per 100 cc. Administration of 2.5 mg. of pyridoxine hydrochloride (B,), subcutaneously, twice a week produced an immediate rise in the red blood cells. It is difficult to draw conclusions at this time on the hematopoietic activity of the preparation of L. casei factort and the pyridoxine hydrochloride, but a complete report will be made in the future.

Much work remains to be done on death

<sup>†</sup>Higgins, G. M.: The Influence of Vitamin Be Concentrate (folic acid) on Experimental Anemia in the Rat. Proc. Staff Meetings of the Mayo Clinic, 19, June 28, 1944.

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losses among suckling mammals. Liver may not be effective in providing all the essential factors for the mother nursing her young. There is also, no doubt, some individual variation in females, some having greater or lesser ability to transfer the factor(s) from the rations consumed to the young through the milk. It is also possible that the diet of an animal previous to slaughter may influence the stores of essential nutrients. If liver extract is to be employed as a therapeutic agent in these cases, then such a product should be standardized. At present, liver extract is tested on human beings having pernicious anemia. A unit is the measure



Fig. 7—Mongrel wire-hair female (139) at termination of lactation.

of the reticulocyte response to a given quantity of liver extract. So far as is known, pernicious anemia does not occur in animals. Under the conditions of our observations, the unitage claimed for liver extract cannot be used in deciding the proper dosage for dogs. Possibly, the lactating animal on a standardized diet could serve as a means for assaying liver extracts.

It is hoped that these preliminary observations and suggestions will stimulate a wider interest in this field. Until the results of further studies are available and can be applied to clinical cases, the following recommendations are made:

1) Obtain a complete dietary history of the nursing mother, including detailed information concerning the ration fed during the gestation period. Ascertain whether any changes have been made in the diet since the birth of the young. If the ration contains considerable amounts of corn products, little or no good quality alfalfa leaf meal, little wheat by-products such as middlings, bran and germ, no ground whole oats, liver or milk, then losses may be anticipated in the young even though the ration may be rich in protein concentrates such as soybean meal, tankage, or meat meal.

- If the value of the animal warrants, liver therapy can be used on the mother and the suckling young. Also, be sure to balance the diet of the mother.
- 3) If the deficiency appears in the early spring in omnivorous or herbivorous animals, put the animals immediately on fresh green pasture since young growing grass is apparently a source of these nutrients.

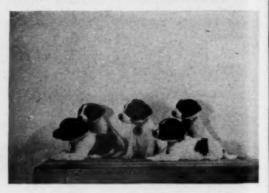


Fig. 8-Pups of female 139 at weaning.

#### References

"Thomas, K.: Über die biologische Wertigkeit der slickstoffsubstanzen in verschiedenen Nahrungsmittel. Arch. f. Anat. u. Physiol., Physiol. Abstr., (1909): 219.

<sup>3</sup>Mitchell, H. H.: A Method of Determining the Biological Value of Protein. J. Biol. Chem., 58, (1924): 873.

<sup>3</sup>Beadles, J. R., Quinsenberry, J. H., Nakamura, F. I., and Mitchell, H. H.: Effect of the Ripening Process of Cheese on the Nutritive Value of the Protein of Milk Curd. J. Agric. Res., 47, (1933): 947.

<sup>4</sup>Allison, James B., and Anderson, John A.: Personal Communication.

The present population of milk cows and heifers is 27,785,000 in continental United States. The hog population which was 82,852,000 a year ago is now 60,660,000. Sheep during the year declined from 51,769,000 to 47,945,000. The total cattle population is 81,760,000, a decline of 604,000, but an excess over the peak of World War I, which was estimated at 81,400,000 for 1918.—From The Cattleman.

## Postwar Planning in Veterinary Medicine

H. L. FOUST, D.V.M.

Ames, Iowa

WERE I to base my discussion on a text, it would read something like this: "Verily I say unto you, except as a profession grows in numbers and increases in quality, it shall slowly degenerate and die. Be ye forewarned!"

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Living things must grow. Growth is the antithesis of deterioration and death. Growth means not only replenishment of worn-out parts but increase in quantity. A static thing may exist for some time, but soon it will succumb to its own toxins, the dregs of its own smugness.

Apropos of our theme is the saying, "It is not so important where we are going, but in what direction and at what speed." Bradfield, in a recent speech, quoted Stine as follows: "We are going to be visionary to the point of audacity." Bradfield then said, "If agriculture is to keep pace with industry, agriculture must be equally bold and farsighted."

An editorial in Fortune<sup>2</sup> emphasizes this same need for looking forward:

"The world belongs to risk." So wrote a French writer to his unheeding countrymen in 1937. Once, no group of men understood this phrase better than the Anglo-American society that carried trade and enterprise and industrial advancement around the earth at all hazard. It is a spirit that is returning. It is imperative in the next great movement of history for the entrepreneur to stand and take his risks. No society has yet failed to reward and no lasting harm can come to the man who produces the goods.

This certainly, I think, should be as applicable to groups as to individuals.

Now let us see what agriculture expects:

Better rural schools, better health facilities, more modern rural homes, extension of rural electrification. Those who remain on the land to produce food and fiber and other raw materials for industry will expect a balance in our economy that will enable them to acquire a competence beyond just material subsistence—a competence that will enable them to maintain desirable standards of American living.

Agriculture and industry have been said to be complementary. Veterinary medicine is complementary to human health and to human medicine, but depends on agriculture and on those employed in industry for much of its income. Our profession must follow zealously the trends in agriculture. It is sensitive to conditions in both agriculture and industry. We must follow with a discerning eye changes in these two fields.

The prepared mind benefits when chance puts something in its way. Forewarning makes possible forearming. Ours is the responsibility to determine whether we shall go ahead or whether we shall drift. Many of us recall the poem "Invictus" by Henley, which begins:

"Out of the night that covers me, Black as the Pit from pole to pole, I thank whatever gods may be For my unconquerable soul."

and the final lines:

"It matters not how strait the gate, How charged with punishment the scroll, I am the master of my fate: I am the captain of my soul."

With groups, as with individuals, the direction of the course to be taken is something for each to determine. What shall we do? Is it enough that we just give of our technical abilities?

Dean Rusk<sup>3</sup> said recently: "Those who are working for a better integration of agriculture and industry and for a better America after the war should recognize that, while planning on state and national levels is necessary, it cannot substitute for individual planning and individual initiative; that there is urgent need for a rebirth of individual, family, and community responsibility; and that plans, which fail to encourage acceptance of such responsibility, tend toward regimentation."

We, as veterinarians, have given unstintingly of our time and energy in community activities. It is fitting that such is the case. By training and interest we are fitted for community leadership. As we look about, we see various local groups, clubs, societies, and livestock groups in

This paper, slightly modified, was presented at the meeting of the Eastern Iowa Veterinary Medical Association, Oct. 11, 1944.

The author is chairman of the Postwar Planning Committee of the A.V.M.A. He is also professor and head of veterinary anatomy, Division of Veterinary Medicine, Iowa State College, Ames.

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which our services could be valuable, public relations-wise. Our interest has two purposes: the furtherance of community development, and educating the public to the value of veterinary service—to what a veterinarian is trained to do.

Not only do we owe participation in local activities which are not directly professional in nature, but we also owe our fullest allegiance to our county, district, state, and national professional associations. We must remember that such a group as this, the Eastern Iowa Veterinary Medical Association, is a flourishing concern because of our deep interest in it. We support it by our membership, by our attendance at its meetings, and by sharing responsibility for its programs. When we see and feel the value of the common fellowship of membership in our professional organizations, we are shocked to learn that some 4,000 qualified veterinarians are not members of their national association, according to editorial comment in a recent number of the Jen-Sal Journal, which goes on to say:

The difference between having these men as members or nonmembers may mean success or failure in proper postwar progress of the profession or in offsetting many encroachments on the rightful field of veterinarians.

In an "organized" age, a well-financed, working, national association is not a luxury but a sheer necessity. The few dollars spent annually for membership in the AVMA is without doubt the most profitable investment that can be made by any veterinarian.

Let us consider for a moment what the community owes the veterinarian. For a long time, the economic status of the individual has been considered an inherent right. Is this a good ultimate doctrine? Is the exercise of freedom all that matters? It would seem that security is the greater need—security in which to practice one's profession and to participate in its advancement. Government owes this security to its citizens; more than this may smack of paternalism with its directives and limitations.

Each of us must see that we have a part to play in the coming days. We must realize our shortcomings; we must use our faculties. Disuse of faculties may mean not only loss of them, but their replacement by something most undesirable. The effect of failure to use what we have is well illustrated by Summers<sup>5</sup> in an article in the Reader's Digest, in which he says: "The inescapable price of free government is that

we exercise it. The most destructive force in the world is nonuse. If we do not use our powers of self-government in the states, we shall awake one day to find that self-government has passed irrevocably out of our hands." We must know our faculties, our possibilities, our needs; we must comprehend our problems.

Beukema<sup>6</sup> wrote in *Fortune* that the Baruch rubber inquiry committee records its bare conclusion that our current difficulties are the result of "errors growing out of procrastinations, indecisions, conflict of authority, clashes of personalities, and lack of understanding." The key phrase in that blistering comment is "lack of understanding." It is impossible to conceive that any administrator in authority, given the needed understanding, would act otherwise than in the nation's best interest.

You all know the story of the fabled blind men of Hindustan who examined an elephant. One of them put his hand on the elephant's side and concluded that the animal resembled a wall. A second felt the trunk and was certain that the elephant was like a snake. Another touched a tusk and said the elephant was like a spear. A fourth grasped a leg and exclaimed that it was like a tree. The one who palpated the ear was sure the beast was like a fan. The sixth found the tail and he exclaimed, "Why, the elephant is like a rope!" These blind men were, all of them, right in so far as they went, but we can see that if their observations went no farther what a conflict of opinion there must have been. Thus, it is seen that insufficient knowledge may be the cause of many misunderstandings.

What are the facts about our profession? How pertinent are they? Let us understand our profession. Understanding of our problems will put us well on the way to their solution.

One of our great problems, as I see it, is that there be a proper distribution of veterinarians, that the greatest service may be offered. In the *Haver-Glover Messenger* for September-October, 1944, it is stated that in Missouri, there are 27 counties without veterinarians. This condition is illustrative of the situation in many states. What are some of the factors which may affect the distribution of veterinarians? There are six factors which, I think, are of prime importance.

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ber of the various classes of livestock. The Postwar Planning Committee has attempted to study the correlation of the number of veterinarians to the number of hogs, beef cattle, dairy cattle, horses, mules, and chickens and the total value of livestock by counties in the State of Iowa. It was found that but 45 per cent of the variability in number of veterinarians was associated with these items. Thus it is seen that the greater per cent of variability is due to other things than those studied. Study of similar factors in one other state gave quite parallel results.

In considering the livestock factor, it is interesting to follow the per capita meat consumption in this country during recent years. According to Breeder's Gazette7, "Consumption for the five-year period from 1909 to 1913 averaged 140 lb. per person, but for the depression years from 1929 to 1934 it dropped back to 134 lb. per person." The following statistics are also cited in

that periodical:

In the Iowa Farm Register for Oct. 1, 1944, it is stated that the number of cows owned by members of artificial breeding associations in the State of Iowa has increased from 7,500 before 1944 to 15,000 at the present time. Observation of these figures shows the recent upward trend. The effect which World War II will have on the actual consumption of meat and on activities like artificial breeding associations will have to be measured in the future.

Second, highway improvements are probably of much importance in determining the

distribution of veterinarians.

Third, the number of veterinarians in a community may have exactly one or the other of opposite effects. One effect is that the number of livestock may limit the number of veterinarians which may be supported; the other effect is that the actual presence of veterinarians in a community may attract others. This latter effect is not limited to the veterinary profession, but is quite apparent in others. Witness the number of nameplates of lawyers and physicians along streets in certain cities!

Fourth, there is the factor of community attitude. There is no question of the desirability of a community for practice which has been accustomed to veterinary service.

Fifth, there is the great problem of income in sparsely settled communities and in more densely settled districts in which the livestock owners have a low level of income. The plight of the marginal areas is being given serious thought by many. The predicament of the low income areas is a serious one and not likely to be solved soon.

Sixth, there is the veterinarian himself. What is his attitude toward the profession and the distribution of veterinary services? It would seem that the veterinary profession is equipped to assume all responsibilities in the control of animal disease and, in addition, to accept the responsibility, in large measure, for the sanitary inspection of food products of animal origin.

How shall we determine whether we are living up to these latent and potential responsibilities? The rank and file of the profession will have to decide that. The practitioners, federal and state veterinarians, teachers in veterinary colleges, research veterinarians, veterinarians in pharmaceutical and biological houses, in fact, all veterinarians, whatever their endeavors, cannot escape this responsibility to the profession.

Let us briefly study the age factor of veterinarians in the United States as of 1942. The figures are from tables supplied to the AVMA office by the National Roster of Scientific and Specialized Personnel and are based on questionnaires returned by 11,494 veterinarians. The questionnaires were circulated by the Procurement and Assignment Service.

Age Distribution of Veterinarians in 1942

AGE GROUP	YEAR OR DECADE OF BIRTH	NUMBER IN GROUP	PER CENT
71 or over	1872	486	4.2
61-70	1872-1881	1445	12.6
51-60	1882-1891	3345	29.1
41-50	1892-1901	2232	19.4
31-40	1902-1911	1706	14.8
21-30	1912-1921	2223	19.3
Not given	Not given	58	0.5

It is of high significance that 5,276 of the veterinarians questioned, or about 46 per cent, were in the age group above 51

(now 53) years. It does not require much of a flight of the imagination to see what changes must take place in this group in the next few years. For replacement alone, and not considering the development of any new fields for veterinary service, the number needed is quite large.

In June or August, 1945, all of the classes in school in 1942 will have been graduated. Previous to 1942, about 500 students were being absorbed by the profession each year in the United States and Canada. Owing to the great decrease in enrollment, both in the classes mustered out of the Army Specialized Training Program and remaining in college and in the classes of new students, the succeeding graduating classes for some time will fall far below the average for the years previous to 1942. Replacements of losses to the profession will only partially be met by this number. However, it is hoped that the war will be over soon; the veterinarians mustered out of military service then will be available to help fill the normal gaps in the professional ranks.

We must ever keep before us that the profession is composed of individuals like you and me. The distribution of veterinary service is our problem. It is our responsibility to see that the best possible veterinary service is available to all. Each of us must accept and perform his part.

Eric Johnston, writing in Life<sup>8</sup>, gives us this precious bit:

In an army hospital in Moscow I visited the ward devoted to the care of injured women guerrillas, many of them young girls, who had served far behind the German lines. As we entered one ward, Strui Fekla, who was sitting in a rocking chair, struggled to her feet to exhibit her dexterity with artificial limbs. Both legs had been severed at the hips. My questions brought forth the reluctant admission that she had operated behind the German lines as a sharpshooter.

"Aren't you rather afraid of life in the future?" I asked.
"No," she said in a steady and clear voice.

"No," she said in a steady and clear voice.
"I am only 26 years old and life is before me."
"But your lost legs?" I inquired.

"That's nothing," she replied. "I am glad to do this for Russia. There is no sacrifice too great to be made for one's country." "Would you do it again?" I asked.

"Would you do it again?" I asked.

She shifted her position. A grin displayed many gold teeth. "Of course," answered Miss Fekla. And then, in her own way, she went on to explain that one person's life, at best, lasted only a few years and that Russia must go on—not as a slave state but as a great sovereign nation,

Our profession is greater than any one or two individuals. The attitude of this Russian girl is a wonderful example of what the individual may do. Our profession must go on! Unless we do give this greatest possible service as a profession we may be confronted with some of the problems of human medicine. There they have the "Blue Cross." Early this year more than 13,000,000 people had enrolled in "Blue Cross hospital service plans." More than 1,000,000 had enrolled in medical plans sponsored by medical societies. In Jasper County, Iowa, the Farm Register of Oct. 1, 1944, says that a goal of 500 members of the Blue Cross hospitalization is being set. The American Dental Association is reportedly working on some sort of prepayment plan for dental care. Maybe veterinary medicine should be studying similar plans for the future. Human medicine, too, has its Wagner-Murray Bill with its apparent threat of centralized federal control of the medical profession and what it may essentially mean to the American way of life.

Group practice may provide services that may extend to all veterinary fields. By group practices is not meant coöperative health or federally controlled groups, but veterinarians who decide that by mutual agreement they will extend their service into all fields open to the veterinarian. Other solutions may come to those who will give thought to the problem of the most complete veterinary service.

Continually on the alert for the extension of the usefulness of the profession will make latent outlets available. New outlets must be found; better distribution and better means of distribution must be found. These factors are all necessary if our profession is to grow and absorb the well trained young men becoming available.

Summarizing, I have tried to show that the extension of the usefulness of the veterinary profession and the distribution of veterinarians largely fall upon each one of us as individual veterinarians.

#### References

- <sup>1</sup>Bradfield, Richard: Our Jobs Ahead. Science, 97, (1943): 276.
- <sup>2</sup>Editorial: The New World Belongs to Risk.
- Fortune, 27, (1943): 111-112.

  \*Rusk, H. P.: Postwar Problems Facing Agriculture and Business. Speaking for Agriculture. Coll. of Agric. U. of Illinois, Circ. 582.
- \*Editorial: Jen-Sal Journal, 27, (1944): 3.
  \*Summers, H. W.: Don't Blame the Bureaucrat!
  Reader's Digest, 43, 1943.

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Beukema, H.: School for Statesmen. Fortune, Jan. 1943.

Friley, C. E. and Kildee, H. H.: Livestock and Our National Welfare. (Data from USDA and National Livestock and Meat Board). Breeder's Gaz., 108, (1943): 6-7; 24-25.

<sup>8</sup>Johnston, Eric: Russian Visit. Life, Sept. 11, 1944.

<sup>o</sup>Mannix, John R.: Why Not an American Blue Cross? Reprint from Hospitals, April, 1944.

## Chemotherapy Take Notice

As much as chemotherapy is condoned for celebrating the discovery of sulfa drugs and antibiotics, vaccine therapy, too, is justified in pounding its chest. Of the thousands of American soldiers who have streamed into yellow fever regions, not a single case of yellow fever has appeared These same soldiers have among them. been exposed to the master killer, typhus, without losing a man from that disease, and, says Ratcliff in This Week Magazine, were influenza, which "took" 20,000,000 in 1918, to break out it would meet the protection of a new vaccine. It is not necessary to tout biological therapy in animals, here.

# Acetonemia Yields to Vitamin-A Treatment\*

On the evening of January 25, when called to visit a cow reported to be stricken with milk fever, I found one of the severest cases of acetonemia I have ever seen. This cow had a calf 5 days old and had eaten absolutely nothing but prairie hay. She had an arched back and an S-curve of the vertebral axis. When not gnawing at the manger, eating dirt, or licking at her sides, she held her head high, staggered in walking, acted nervous, and her breath had the odor of acetone. The Hayden test in 1:10 dilution turned her urine a deep wine red. In short, she had everything a case of acetonemia is supposed to have.

Treatment.—The cow was given 500,000 International Units of vitamin A by mouth. By 10 o'clock the next morning, the symptoms had disappeared except for a slightly arched back and some stiffness in walking. Her urine, undiluted, reacted but moder-

ately to the ketone test. Another 500,000 I. U. of vitamin were given, and the next day, dropping in on passing the farm, she was normal in all respects.—W. L. Stroup, D.V.M., Corinth, Miss.

## Autohemotherapy in Rinderpest

"Rinderpest-A Cure (Some Observations)", by D. W. Amarasinghe, G.B.V.C., assistant government veterinary surgeon (Ceylon J. Vet. Sci., Dec., 1944) is a report of sensational results the author obtained in the treatment of rinderpest by the simple method of reinjecting virulent blood into the same animal (autohemotherapy) at the early stage of the disease. Doses of 30 to 40 cc. of the virulent blood were used. In one experiment set up, there were 10 rinderpest-infected meat cattle, 5 of which were controls. Of the 5 treated cattle, the temperature of 3 was still high and 2 already subnormal. All of the former 3 recovered, the temperature dropping to normal the next day. The 2 subnormal cases and 4 of the controls died. In a second experiment comprising 8 cattle and buffaloes (4 treated and 4 controls), all with temperatures ranging from 102.5 to 106.2 F., the positive results were total: the treated recovered and all of the controls Commenting editorially, the Ceylon journal points out the lack of clearness in the report for this type of work, and that facts in regard to the dates of actual recovery are lacking. Keen interest in the published report by the local press is claimed by the authors, in a letter dated Jan. 8, 1945.

Milk production in the United States may reach 119 million pounds in 1945, according to the estimate of the Bureau of Agricultural Economics.

Hay fever desensitization by the oral administration of pollen may be conveniently accomplished. The oral method is more effective than the hypodermic, besides being less expensive, and unattended by reaction, says *Medical Times*.

Since 1935, the incidence of tuberculous cattle in the United States declined from 1.5 per cent to 0.2 per cent.

<sup>\*</sup>The author submits a number of comparable reports which are filed for future publication.

## The "Disassembly" Line

(See article on opposite page.)



## Government Veterinary Inspection of Canned Poultry Meat

LEE A. BLANK, D.V.M.

Chicago, Illinois

The pictures on these pages depicting the modern, finely equipped, chicken-canning plant of the Chicago Western Corporation in Chicago, illustrate another phase of poultry meat hygiene, and supplement the article in the JOURNAL (March, 1945: 145-152) by Dr. E. M. Lynn on quick-frozen, eviscerated poultry.

As shown in one of the pictures, WFA



Fig. 7—Retorts for sterilizing cans. Laurence H. Brink, vice-president of company operating hoist.

presented the Chicago Western Corporation with the Achievement "A" Award on April 6, 1945, in recognition of its meritorious production record in preparing canned chicken for the armed forces. The company, first in the Middlewest so honored, is the only one exclusively devoted to the preparation of canned, boned chicken whose entire production has gone to the government.

Dr. H. A. Weckler, assistant national supervisor of the Poultry Inspection Section, presided at the award ceremonies. Lt. Commander E. A. Hawthorne, SC-USNR, in charge of the Navy Market Office, Chicago, presented the flag and Donald E. Smith, 'deputy regional Director, WFA, presented the pins to the employees. The flag award was accepted by Carl A. Larsen,



Fig. 8—Final inspection—packing and strapping for shipment.

president of the company. Miss Frances Lesiak accepted the pins in behalf of the employees.

Marked ingenuity is shown in the arrangement of the plant and its operations. The assembly line or, in reality, the "disassembly" line principle is employed, start-

## Legends for Illustrations on Opposite Page

Fig. I—First step in operation—pinning line and automatic singer.

Fig. 2—Eviscerating line. (1 and 2) cutters; (3 and 4) breakers; (5) government veterinary inspector; (6) Army inspector (7) saw girl; (8 and 9) giblet trimmers; (10 and 11) croppers; (12) floorlady; evisceration continues down the line.

Fig. 3—(1) Chief cook putting chickens in kettle; (2) veterinary inspector.

Fig. 4—Boning department—part of boning operation shown.

Fig. 5—Final inspection (small bones, blood vessels, cartilage, etc). (1 and 2) Final inspection; (3) scaler; (4) weigher and mixer determining the uniform proportion of kinds of meat; (5) Army inspector.

Fig. 6—Filling and weighing cans, and closing machine.

ing with the chickens "New York dressed" (plucked only); various parts are removed



Fig. 9—Principals in award ceremony: (left to right)— Carl A. Larsen, president of Chicago Western Corporation; Lt. Com. E, A. Hawthorne, SC-USNR, Officerin-charge, Navy Market Office; Dr. H. A. Weckler, Assistant National Supervisor, Dressed Poultry Inspection, WFA, who presided at "A" award ceremony.

as the carcasses move along the line. It is during this continuous process that the government veterinarian makes his inspections and removes any birds or parts which he condemns. In this way, only birds fit for human food reach the cooking vats.

Further disassembly takes place after the cooking process; the meat is separated

from the bones and packed in cans in predetermined and uniform proportions of each kind of meat.

The inspection of beef, pork, and other



Fig. 10—Officials of Chicago Western Corporation: (left to right)—William W. Holden, secretary; Carl A. Larsen, president; and Laurence H. Brink, vicepresident.

meats for the consuming public and the meat-packing industry has been so long recognized that expansion of this kind of veterinary public health work in the poultry meat industry on a large scale may be anticipated.

### Sexual Excitation in Rabies

A human case of clinically diagnosed rabies in which extraordinary sexual excitation predominated is described in the Indian Veterinary Journal of November, 1944. The victim was a 30-year-old professional wrestler of strong physique, who supposedly contracted the infection when, sleeping outdoors five months previously, he was licked on the foot by a dog. The symptoms, following a period of giddiness, were extreme libido, frequent erections, spermatorrhea, ejaculations, and the usual laryngeal spasm while attempting to drink water. The occurrence of sexual excitement in the early stages of certain cases of canine rabies furnished a clue to the diagnosis. The author also points out that the infection was transcutaneous without abrasion as no skin injury could be located when the foot was examined after the exposure.

## Dry Butterfat Made from Whey Butter

Whey butter can now be converted commercially into dry butterfat, which keeps without refrigeration. This product is not a "spread," but it will replace butter in cakes, ice cream, and toffee. The cost of drying and packaging will be about 3 cents a pound, but the initial investment in equipment is high.

The process consists of melting the butter under 1 lb. of steam pressure, permitting some separation by gravity, and then completing the process with centrifugal force in cream separators, and drying under vacuum.—New Zealand J. of Sci. and Tech.

Those who labor in agriculture are not apt to forget that price recessions do follow all great wars, nor that farmers are hit first and longest.

# Classification of the Phenomena of Specific Sensitivity in Lower Animals

CHARLES R. SCHROEDER D.V.M.

Pearl River, New York

HYPERSENSITIVITY, anaphylaxis, and allergy are not new terms in the veterinary medical vocabulary, but they are generally misused. The broad subject of allergy, however, has only recently been presented as a problem in animal disease. At infrequent intervals, papers have appeared which restimulated

interest in this subject.

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Sources of veterinary abstracted literature, including Veterinary Bulletin, Index Veterinarius, Biological Abstracts, and Experiment Station Record, do not carry the specific disease classification, "allergy" "anaphylaxis", or the older term, "idiosyncrasy". The International List of Animal Diseases1 does not list a separate section on either anaphylaxis or allergy. Strangely enough, however, the International List of Causes of Death in Man (With Joint Causes)2 does list anaphylaxis and not allergy. In the textbook, Special Pathology and Therapeutics of the Diseases of Domestic Animals,3 reference is frequently made to the term anaphylaxis associated with the cause of many nonspecific and noninfectious diseases. For example, under the head, "Urticaria," it is stated: "Some animals show a special predisposition, an idiosyncrasy, to the disease and regularly develop it after taking certain articles of food which other animals can take without ill effect." Also, the statement is made, "Anaphylaxis arising in connection with infestation with hyperderma larvae (crushing the larvae in the skin borough), is often accompanied by urticaria." Many veterinarians are aware that horses with heaves (pulmonary emphysema) have symptomatic relief following environmental changesmoving the rural horse to the city. William Lentz,4 speaking on dermatitis and eczema of the dog, discussed allergy and specifically the rôle of many allergenic substances, whether foods, inhalants, contact irritants, injected biological products, infectious agents, or internal and external parasites, including fungi which may play a part in

establishing cutaneous disease. He spoke of alopecia, urticaria, and angioneurotic edema.

In the general organization of the American Veterinary Medical Association, the Committee on Nonmenclature of Animal Disease and Vital Statistics may set up a section on allergy,5 recognizing that this subject is indeed a virgin and neglected phase of veterinary medicine. Practicing veterinarians are becoming increasingly aware of the problem of allergy. Wittich, Coca, Weil, and others active in the American College of Allergists, frequently and recently approached by animal disease research workers and practitioners, felt that the time was appropriate for the active participation of veterinarians in the field of allergy. They proposed sponsoring and establishing a veterinary section of the college.

The writer was approached to prepare this introductory paper in an attempt to give an acceptable and workable classification of the phenomena of allergy in lower animals, so that those veterinarians participating in the establishment of the section might have a uniform, even though tentative, basis for interpreting, studying, and reporting allergy in veterinary medi-

cine.

The following classification with definitions is proposed. It is based on a review of "Hypersensitiveness" by Coca, who introduces the subject of hypersensitiveness, or preferrably, specific sensitivity, with his definition: "If an individual reacts specifically with characteristic symptoms, to the administration of, or to contact with, a quantity of any substance which, to the majority of the members of the same species of animal that have not had previous contact with it, are innocuous, that individual is said to be specifically sensitive to that substance." Two divisions of the phenomena given on specific sensitivity are anaphylaxis and allergy. An early report on anaphylaxis in animals was made by Magendie in 18397. The first experimental study of this phenomena was carried out by Hericourt and

Presented before the American College of Allergists, June 9, 1944.

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Richet<sup>8</sup> in France on dogs in 1898. They adopted the term anaphylaxis (without protection) instead of prophylaxis, since they felt that the material injected destroyed natural resistance and produced susceptibility instead of immunity to the toxin. Similar studies by Arthus9 on the rabbit, the Arthus phenomenon, and by Theobold Smith10 in the guinea pig, the Theobold Smith phenomenon, and many others established the field of study of specific sensitivity and particularly anaphylaxis. Richet's concept of anaphylaxis according to Coca was wrong, because the specific anaphylactic mechanism has been shown to be due to an antibody indistinguishable from precipitin.

#### ANAPHYLAXIS

Acute anaphylactic shock has been proved to be the physiologic effect of the antigen antibody reaction, occurring in unstriped muscle, which is the shock tissue in all animal species other than man. Human smooth muscle has not been found to be a shock tissue and this type of specific sensitivity, therefore, does not exist in man. In animals, death is mechanical, due to contraction of unstriped muscle. symptoms are the same in all individuals of the same species, but differ in the different species, according to the location of the shock tissue that is responsible for the symptoms. Thus, numerous investigators have shown that the essential shock tissue in the guinea pig is the bronchial muscle, in the rabbit it is the media of the pulmonary artery, and in the dog the media of the hepatic vein. These specific tissues react to produce the particular symptoms because of their structural peculiarity, most important of which is the great proportion of smooth muscle to the lumen of the part. The symptoms are correspondingly characteristic for the three species, namely, respiratory asphyxia in the guinea pig, circulatory asphyxia in the rabbit, and the results of passive congestion of the portal vein and its tributaries in the dog, with ultimate death due to lowered systemic blood pressure.

The term anaphylaxis can be defined as specific sensitivity, mediated by precipitin; at any rate, it can safely be stated that specific sensitivity mediated by precipitin is anaphylaxis. Conversely, no allergic condition has ever been shown to be mediated by precipitin. On the basis of this

definition, Coca<sup>11</sup> in 1920 proposed to separate the phenomena of allergic disease in man from anaphylaxis of animals and this proposal has continually gained in strength and general acceptance since that time. He found it necessary also to classify the allergic phenomena into four categories and has recently recognized a fifth.

### ALLERGY

1) Atopy.—Typical examples of atopy are hayfever, bronchial asthma, and food eczema, often spoken of as reaginic allergy. This category has approximately 7 per cent occurrence in man and generally is skintest-positive. Of the two kinds of asthma, 50 per cent belong to this category and 50 per cent are nonreaginic.

Congestion and edema are the pathologic lesions of atopy in man. Atopy or reaginic allergy is now defined as a familial allergenic disease in which the mediating antibody is the atopic reagin.

Atopic reagin is the antibody present in the blood of an atopically sensitive individual through the agency of which specific sensitiveness may be passively conferred to a normal individual. This is the antibody concerned in atopy. It is thermolabile; will not sensitize guinea pigs; does not sensitize unstriped muscle; equivalent mixtures of reagins and specific antigens are not inactivated. Reagins are specific, but otherwise do not resemble antibody.

- Contact Dermatitis.—Examples are poison ivy, poison oak, and sumac dermatitis.
- 3) Hypersensitiveness of Infection, or Infectious Allergy.—Examples are sensitivity to tuberculin, mallein, and brucellergin.

4) Serum Disease.—This is an allergic reaction following injection of foreign serum, and is marked by urticarial rashes, edema, adenitis, joint pains, high fever, and prostration, not mediated by precipitin.

5) Familial Nonreaginic Allergy.—Examples are urticaria, migraine, and angioneurotic edema. There is no demonstrable circulating antibody. Patients are skintest-negative. This type of allergy is constantly associated with specific tachycardia.

No circulating antibodies have been identified in contact dermatitis, infectious allergy, or familial nonreaginic allergy as of etiologic significance. On the contrary, the nonprecipitating peculiar skin-sensitiz-

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ing atopic reagins of atopy are now universally recognized as the specific mechanism of that category and it seems possible that Karelitz and Stempien, 12 with the technique of Voss, have made a positive identification of the antibody of serum disease as distinct from precipitin, thus confirming the classic assumption of von Pirquet and Schick, who theorized that injected foreign serum stimulated production of specific antibodies, which react after a variable incubation period with the injected serum antigen, to bring about the symptoms of serum sickness.

It has been stated that for many years veterinarians have suspected that lower animals were affected by allergic conditions that are similar to and perhaps essentially identical with those recognized in human The existence of a condition medicine. resembling serum disease in cattle and in horses was reported by Gerlach13 and had been known to Eichhorn<sup>14</sup> under the name of anaphylaxis in 1919. Serum disease has frequently been recognized in recent years in small animals. Ringworm or trychophytosis, with its lesions of infectious allergy with so-called "ids" occurring in other parts of the body, has long been recognized as affecting lower animals, but in recent years, several reports have appeared, which together leave little, if any, doubt that all of the first four categories of human allegric diseases are represented in lower animals, namely, (1) atopy or reaginic allergy, (2) contact dermatitis, (3) infectious allergy, and (4) serum disease.

Beginning with the atopic group, we recall the report of Schnelle<sup>15</sup>, Burns<sup>16</sup>, Wittich<sup>17</sup> and others on the occurrence of allergy in dogs. Wittich observed seasonal occurrence of the characteristic symptoms of hay fever in dogs, the positive cutaneous tests and the clinical tests carried out with ragweed pollen outside the hay fever season and he demonstrated atopic reagins by the Prausnitz experiment (passive transfer of reagin to locally sensitize the skin of another host).

More recently, Brunner, Altman and Bowman<sup>18</sup>, demonstrated canine sensitivity to ascaris antigen and Weil and Reddin<sup>19</sup> have reported that typical thermolabile atopic reagins, specific for pollen antigen, occur naturally in some bovine individuals. The existence of atopic allergy in lower animals

seems definitely established by these observations. In lower animals, contact dermatitis has not yet been identified as occurring under natural conditions, but it has been experimentally induced in monkeys by Straus<sup>20</sup> and in guinea pigs by Landsteiner and Chase<sup>21</sup>. Straus used an extract of poison ivy; Lansteiner and Chase used poison ivy and various chemical excitants, and also a protein coupled chemical hapten. It may be noted that as is the case in man, the excitants of experimental contact dermatitis employed by these investigators were all nonantigenic. The coupling of the chemical hapten to protein in the cited experiment of Landsteiner and Chase was not essential to the sensitization by the nonantigenic chemical.

Infectious allergy, as indicated above, is represented clinically in lower animals by the fungus infections known collectively as ringworm. The lesions of ringworm have been shown, especially through the investigations of the Swiss dermatologist, Bruno Bloch<sup>22</sup>, to be allergic. Infectious allergy is also demonstrable in lower animals affected by tuberculosis, glanders or brucellosis, through the cutaneous tests with tuberculin. mallein or brucellergin, respectively. Other similar examples will occur to you. The occurrence of serum disease in cattle and horses has been referred to. To these examples of that category must be added the peculiarly limited manifestations of serum disease reported by Moyer S. Fleisher<sup>23</sup> as occurring in rabbits. The manifestations of serum allergy observed in monkeys by Zinsser<sup>24</sup> and especially by L. M. and N. Kopeloff<sup>25</sup> seem to belong in the category of serum disease. The category of nonreaginic food allergy described in the recent publications of Coca<sup>26</sup> has not yet been positively identified in lower animals. Coca, has found specific tachycardia to be a constant accompaniment of the nonreaginic food allergic reaction. Whether such an effect of food allergy occurs in lower animals remains to be investigated.

In August, 1932, I had the rare experience of observing the instance of food allergy occurring in a walrus.<sup>27</sup> A young nursing female, captured in the Bering Sea, at the age of 4 months, had been fed bovine evaporated milk. When brought to the San Diego Zoo, the animal had symptoms of gastrointestinal distress, with urticaria, conjunctivitis, drooling with

abundant mucus in the mouth, rhinitis, and dyspnea. On frequent occasions, we believed she experienced migraine, demonstrated by her insisting on pressing her head hard against the attendant's body to permit rest. Complete avoidance of any form of milk brought about relief of all symptoms. It was interesting to note that when mineral oil was given, preceding the milk feeding, symptoms were less pronounced and relief of symptoms was apparent.

It is unfortunate that at the time this case was seen, the subject of allergy was too little known to those of us responsible for the report to undertake to find out in which of the two allergic categories it belonged, atopy or nonreaginic allergy. Coca believes that food-allergic eczema (dermatitis), following ingestion of the allergenic food, can be atopic (atopic dermatitis) or it may be nonreaginic. Angioneurotic edema is regularly nonatopic. Hence, the appropriate examination, in this milk-allergic walrus, should have been concerned with the possible presence of milkspecific reagins in the blood or with the pulse-accelerating effect of .milk on the animal.

This review is written to acquaint veterinarians with the interesting subject of specific sensitivity and its two divisions, anaphylaxis and allergy. It is important that the study of this comparatively new field in veterinary medicine should begin with a full knowledge of the known fundamental principles underlying the classification of the allergic phenomena. Each category may then be recognized in the field and it is hoped that statistics will become available through publication, which will add materially to our present knowledge of allergy in animals.

### References

<sup>1</sup>International List of Animal Diseases. nary Research Institute, Ondersteport, South Africa. Government Printer, Pretoria, South Africa 1938.

<sup>2</sup>Manual of the International List of Causes of Death (5th Revision) and Joint Causes of Death (4th Edition). U. S. Dept. of Commerce, Bureau of U. S. Government Printing Office, Wash-Census. ington 1940.

<sup>3</sup>Hutyra, F.; Marek, J., and Manninger, R.: Special Pathology and Therapeutics of the Diseases of Domestic Animals. Vol. III. 4th Ed. Baillière, Tindall and Cox, London 1938.

<sup>4</sup>Lentz, W., Professor of Veterinary Anatomy, Director of the Small Animal Hospital, University of Pennsylvania. Unpublished Lecture Notes.

\*Schoening, H. W., United States Bureau of Animal Industry, U. S. Dept. of Agriculture, Washing-

ton, D. C. Committees, Nomenclature of Diseases, J.A.V.M.A., 103, (1943): 264. \*Coca, A.: Hypersensitiveness. Reprinted Tice's

Practice of Medicine, W. F. Prior Co., Hagerstown, Md. Chapter VI. I:107-171.

'Magendie; cited by Morgenroth: Ehrlich's Gesammelte Arbeiten. Tran. Wiley & Sons, New York. (1906): 332.

\*Hericourt, and Richet: Compt. rend. Soc. de biol. (1898); cited by Coca, A. F.; Walzer, M., and Thommen, A. A.: Asthma and Hay Fever in Theory and Practice. Charles C. Thomas, Publisher, Springfield, Ill. 1931.

<sup>9</sup>Arthus, M.: Injections répetées de sérum de cheval chez le lapin. Compt. rend. Soc. de biol.,

55, (1903): 817-820.

10Otto, R.: Das Theobald Smithsche Phänomen der Serum-Ueberempfindlichkeit. Ddenkschr. f. d. verstorb. Generalstabsarzt. d. Armee . . . v. Leu-

thold., 1, (1906): 153-172.

11Coca, A. F., and Kosakai, M.: Studies in Anaphylaxis. J. Immunol., 5, (May 1920): 297-319.

<sup>13</sup>Karelitz, S., and Stemplen, S. S.: Studies on the Specific Mechanism of Serum Sickness. I. Passive Serum Sickness, J. Immunol., 44, (Aug. 1942):

F.: Serumkrankheit bei Rind und chr. f. Immunitätsforsch. u. Exper. 18Gerlach, Exper. Pferd. Ztschr. Therap. Orig., 34, (1922): 75, abstracted in Centralbi. f. Bakt., 74, (1923): 243.

14Eichhorn, A.: Personal Communication.

<sup>16</sup>Schnelle, G. B.: Eczema in Dogs—an Allergy. North Am. Vet., 14, (Jan. 1933): 37-44.

16Burns, P. W.: Allergic Reactions in Dogs. J. Am. Vet. M. A., 83, (Nov. 1933): 627-634.

<sup>17</sup>Wittich, F. W.: Spontaneous Allergy (Atopy) in the Lower Animal; Seasonal Hay Fever (Fall Type) in a Dog. J. Allergy, 12, (Mar. 1941): 247-251.

18 Brunner, M.; Altman, I., and Bowman, K.: Canine Sensitivity to Ascaris Antigen. J. Allergy, 15, (Jan. 1944): 1-8.

19Weil, A. J., and Reddin, L., Jr.: Dermal Supersensitivity, Heat-Labile, and Heat-Stabile Antibody Against Ragweed in Cattle. J. Immunol., (Oct. 1943): 345-352.

<sup>20</sup>Straus, H. W.: Artificial Sensitization of Infants to Poison Ivy. J. Allergy, 2, (Mar. 1931): 137-144.

<sup>21</sup>Lansteiner, K., and Chase, M. W.: Studies on the Sensitization of Animals with Simple Chemical Compounds. VII. Skin Sensitization by Intraperitoneal Injections. J. Exper. Med., 71, (Feb. 1940): 237-245.

<sup>22</sup>Bloch, B.: Experimentelle Studien über das Wesen der Iodoformidiosynkrasie. Ztschr. f. exper. Path. u. Therapy., 9, (1911): 509-538.

28Fleischer, M. S., and Jones, L. R.: Serum Sickness in Rabbits. VII. A Method for Removing or Destroying the Factor Causing Serum Sickness. J. Immunol., 36, (June 1939): 511-522.

<sup>24</sup>Zinsser, H.: Observations on Anaphylaxis in Lower Monkeys. Proc. Soc. Exper. Biol. & Med., 18, (1920-21): 57-66.

™Kopeloff, L. M., and Kopeloff, N.: Anaphylaxis in the Rhesus Monkey. I. Horse Serum as an Anti-gen. J. Immunol., 36, (Feb. 1939): 83-99.

™Coca, A. F.: Familial Nonreaginic Food-Allergy. Charles C. Thomas, Publisher, Springfield, Ill. 1943.

"Schroeder, C. R.: Cow's Milk Protein Hypersensitivity in a Walrus. J. Am. Vet. M. A., 81. (Dec. 1933): 810-815.

March, 1945, was among the best on record for early lamb producers.

# SURGERY & OBSTETRICS

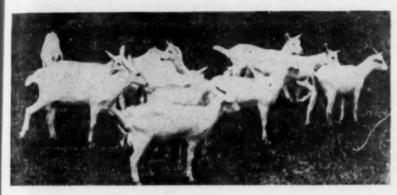
AND PROBLEMS OF BREEDING

### The Saanen Milk Goat

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The Saanen goat is a native of Switzerland. It was first imported to the United States in 1904 "for several gentlemen," the Goat World says. The next year, after investigating the goat situation abroad, a representative of the USDA reported that the Saanen was the breed best suited for

selection of breeding stock was necessary to save the breed from the evils of inbreeding but scrubs were never well enough abolished to suit the goat associations. On the other hand, the government's restrictions have their advantage. The American Saanen must be white, so, there being no such specification abroad, off color



A flock of grade Saanens developed by the USDA at Beltsville, Md.

-From the Goat World

family use, notwithstanding that the Toggenburg was the heavier milker. The reporter was struck with the slim, beautiful, graceful lines of the Saanen and also with the fact that superior individuals of this breed had no peers for milk poundage.

The early importations went mostly to the Pacific Coast; fewer remained in the East. Later, when quarantine regulations checked shipments from abroad, careful offspring do not vitiate the breed. The USDA prediction on the milking potential of the Saanen was well grounded. Recently, the American Saanen, Bonnie Jessica, gave 24 lb. of milk in twenty-four hours on test.

Other breeds which figure in American goat production are Toggenburg, Nubian, Alpine, Swiss Alpine, American Alpine, American Nubian, and Rock Alpine.

## The Perfect Antiseptic

There may be thousands of microorganisms that manufacture microbicides of the gramicidin and penicillin type, and what they manufacture may be the key to the perfect antiseptic, says the London correspondent to the Journal of the American Medical Association. "The work is not finished. It is just beginning." When such products are synthesized and chemists begin to tinker with their atomic arrangement, anything can happen.

## Topical Application of Vitamins to Wounds

No definite benefit was derived when any of the following substances were applied directly to wounds: vitamins A, C, D, and E, thiamine chloride, nicotinic acid, riboflavin, calcium pantothenate, pyridoxine, biotin, urea-sulfathiazole ointment, amine acids, liver extract, cod liver oil, vitamin mixtures, and sesame oil. In all cases, results were entirely negative.—

From Nutrition Reviews, April, 1945.

## Brucella Abortus Isolated from Aborted Fetuses of Vaccinated Heifers

D. L. KERLIN, D.V.M., M.S., AND ROBERT GRAHAM, B.S., D.V.M.

Urbana, Illinois

BOVINE brucellosis vaccinal procedures, as employed in the field, stem largely from the results of critical research by Cotton1 and his coworkers. In critical investigations on calfhood vaccinal immunity, it was noted that the challenging dose of virulent Brucella abortus administered to vaccinated calves to measure the protection provided by calfhood vaccination was resisted by some of the unvaccinated controls. It was also observed that occasionally vaccinated calves were unable to overcome the vaccinal infection or were unprotected against artificial exposure. Danks2 reported the isolation of strain 19 from a case of orchitis in a vaccinated calf. It is to be expected that some vaccinated calves may develop the vaccinal disease and others may not resist natural exposure. The vaccinal approach in immunizing calves against brucellosis is, therefore, relative and not absolute. It is also apparent as set forth by Mohler<sup>3</sup> that the immunizing value of Br. abortus, strain 19, as an aid in the control of bovine brucellosis depends upon proper administration of a potent vaccine to healthy calves.

Calfhood vaccination was approved by the U. S. Bureau of Animal Industry in 1941 as an optional adjunct or aid to the test and slaughter plan of brucellosis control in selected herds. The ultimate objective of both plans is brucellosis-free herds. A few years preceding approval of vaccinal procedures, veterinary practitioners confronted with serious brucellosisinfected herds employed vaccination at the request of owners in preference to test and slaughter. Under field conditions, calfhood vaccination is regarded as successful if heifers, vaccinated at 4 to 8 months of age, give birth to normal calves during first pregnancies. If vaccinated heifers abort or fail to show a negative test at breeding age and following calving, limitations of vaccination as noted in critical investigations become apparent.

This report concerns an unusual outbreak of abortion in heifers following the admin-

istration of Br. abortus vaccine, strain 19. The herd consisted of 35 purebred Angus cows and 35 purebred Angus heifers. The heifers had been purchased and were not the offspring of the cows in this herd. According to the owner, no abortions had been experienced in the breeding cows. Neither the breeding herd at any previous time, nor the heifers preceeding vaccination, had been tested for brucellosis. The 35 untested heifers were inoculated with strain 19 at 6 to 8 months of age and pasture bred about nine months later. The heifers were not tested after vaccination or before breeding. Thirteen (37%) of the heifers aborted during the seventh and eighth months of pregnancy. Following vaccination and up to the time the heifers aborted, they were pastured and fed with the untested Angus cows of this herd.

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Six of the 13 aborted fetuses were submitted to the laboratory and, of these, 2 yielded Br. abortus as judged by morphological and biochemical characteristics. The other 4 fetuses were so decomposed that cultures prepared from them were overgrown with contaminating organisms, and inoculated guinea pigs died of sepsis. The strains isolated from the 2 fetuses on initial isolation grew only under 10 per cent carbon dioxide tension and subsequent transfers grew best under the same gas. Brucella agglutinin production was stimulated in guinea pigs by intraperitoneal inoculation of the strains isolated. Gross lesions characteristic of brucellosis were observed in 9 of 20 guinea pigs inoculated with cultures isolated from the 2 fetuses.

The presence of virulent Brucella in the aborted fetuses admits of the possible non-protective character of strain 19 in the aborting heifers. Exposure to the reacting cows\* was suggested by the results of the herd-agglutination test following abortion in the heifers. However, the brucellosis health status of the cows was not established until eight months following the

From the Department of Animal Pathology and Hygiene, University of Illinois, Urbana.

<sup>\*</sup>Blood samples were collected by Dr. Tom Jones through the courtesy of Dr. A. K. Kuttler, inspector in charge, Bang's-disease control, U. S. Bureau of Animal Industry, Springfield, Ill.

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abortions in the heifers. The possibilities of prevaccinal infection in the heifers, and of nonpotent vaccine, are not disregarded. At the time the herd was tested, 11 of the original vaccinated heifers reacted positively and 5 were suspicious. Nine of the aborting heifers were marketed before the agglutination test was conducted. Nine of the 35 cows reacted positively and 11 were suspicious.

### SUMMARY

Thirteen (37%) of 35 Angus heifers of unknown brucellosis status, vaccinated with strain 19 at 6 to 8 months of age, aborted during the seventh and eighth months of pregnancy. Of 6 fetuses submitted to the laboratory, only 2 proved suitable for examination and these yielded Br. abortus. Pre-and postvaccination and prebreeding agglutination tests were not made on the vaccinated heifers. Several of the cows and heifers of this herd gave positive agglutination reactions eight months following the abortion storm in the heifers. The agglutination test was not made on the breeding cows before or at the time the heifers were vaccinated. In herds where calfhood vaccination is adopted, the health status of the herd, as well as that of the calves, with reference to brucellosis both before and after vaccination and at breeding age, should be determined if the highest potential value of vaccination is to be realized in the control of bovine brucellosis. Vaccinal procedures, if improperly used in bovine-brucellosis control, may be unfairly condemned.

### References

<sup>1</sup>Cotton, W. E.: New Researches and Developments on Contaglous Abortion (Bang's Disease). Twelfth International Veterinary Congress (1934): 283-93.

<sup>2</sup>Danks, A. G.: Brucella abortus, Strain 19, and Orchitis in a Bull. Cornell Vet., 33, (1943): 381-382.

<sup>3</sup>Mohler, John R.: Calfhood Vaccination as an Aid in Coöperative Bang's Disease (Bovine-Brucellosis) Control. J. A.V.M.A., 98, (1941): 1-9.

## Pentothal Sodium in Cattle

W. M. Henderson, Research Station, Pirbright, Surrey, England, in trials on the use of pentothal sodium (Abbott), established the effective narcotic dose for steers at 3 Gm. per 800 lb. of body weight, in 10 per cent aqueous solution. Out of 32 head receiving that dose, light narcosis was induced in 2, deep narcosis in 29, and anes-

thesia in 1. Two grams were found to be insufficient in cattle of that weight. The injection was made in the jugular vein rapidly, while the animal was standing. The result was immediate, the animal falling to the ground within a few seconds after the dose was delivered. The narcosis lasted from twenty-five to thirty-five minutes and the animal remained down for two to three hours without struggling during recovery. During the period of narcosis, no physical restraint was necessary, and upon rising but slight incoördination of movement occurred.

It was found that the solution must be made fresh for each injection. Pooled doses for use a few hours later were less effective.

—[From J. Comp. Path. and Therap., 54, (Oct., 1944): 245-247.]

## Penicillin in Rickettsia and Actinomycosis

The recovery of a 14-year-old boy gravely stricken with Rocky Mountain fever (Rocky Mountain M. J. abst. Therap. Notes, March-April, 1945) was complete in a week after receiving a total of 100,000 units of penicillin by the constant venous drip method. The temperature of 105 F. was normal in three days, dropping to 100 F. within two hours. The rash became generalized but faded within six days. The patient was refractory to sulfa treatment. Penicillin is also giving important results in human actinomycosis, as reported by the Mayo Clinic and the Medical Department of the U.S. Army in the Journal of the American Medical Association (1944).

## Surgery Prepaid

Dr. A. W. Adson, of the Mayo clinic, has developed a plan, geared to low-income families, whereby they will pay a small monthly fee to cover any possible surgical or obstetrical treatment. The plan is backed by the Minnesota State Medical Association. Each of its nine medical districts will recommend two doctors to join a corporation, and the Association will pick three at large. Hospital costs will not be covered in the program, which is designed to render medical service on a plane superior to the so-called State Medicine plan.

## Effect of Dilution Rate on Fertility of Bull Semen

For each insemination, 74 million spermatozoa have been used but no difference in fertility was found with lower rates. Dilutions of 1 part of semen to 8, 12, 16, 24, and 50 parts of yolk-citrate diluent were tried. When the rate was 1 to 50, the average number of spermatozoa was 26 million -the highest desirable level. On the average, 1 cc. of semen contained 150 million down to 26 million spermatozoa for each insemination. There was no difference shown in the fertility of these five dilutions. In fact, the highest dilution was less efficient than the lower ones and the fertility was maintained as well for four days after the specimen was collected. It is, however, possible that if semen in all of these dilutions had been used longer after collection, differences in fertility might have been more pronounced.—G. W. Salisbury, Irvine Elliott and N. L. Van Demark, Cornell University: Further Studies of the Effect of Dilution Rate on the Fertility of Bull Semen Used for Artificial Insemination. J. Dairy Sci., 28, (March, 1945): 233-241.

## The Corpus Luteum

If veterinarians of the teen decade and before weren't excited over the yellow bodies that take charge of the ovaries during pregnancy, it is because no one knew or cared much about them. Although some of the older mammalian physiologists thought they (the yellow bodies) took temporary residence in the feminine gonads to make them behave 'til the job of creating a new being was finished, it was not until 1903 that they began to claim a place among the vital structures, and not until 1928 that they were suspected of being the "supervital essentialities of higher In 1903, Ludwig Fraenkel demonstrated in rabbits that removal of the corpora lutea caused the fertilized ova (embryos) to disappear from the Fallopian tubes, and in 1907, Leo Loeb showed that these bodies somehow prepared the uterus for the reception of the new being descending upon it to start the intrauterine life that repopulates the world. Here, one interpolates somehow because it was not until 1928 that Corner pointed out that the

corpus luteum hormone, progesterone, prepared the endometrium for development of the fetus, in other words, that progesterone is the most vital of all things biological since, without it, all higher life would perish from the earth. In brief, it was not until 1928, or a short seventeen years ago, that the corpus luteum was placed securely among the endocrine glands and later given the rating of being by far the most important of all organs. The stimuli of fetal growth and development, and the starting of lactation are omitted here. piece is about the corpus luteum, and its hormone, progesterone. For the epithelial proliferation caused by it in the endometrium, Corner coined the word progestation, a term for the most vital of physiological processes that is yet to come into general use.

Although the neophysiologist of 1945 knows all this and more, perhaps better than long division, it, however, seems timely to tell the superannuated boys why they weren't fussing with the corpus luteum in the horse-and-buggy days.

## Success of Artificial Breeding

A survey of results obtained from artificial insemination in New Jersey since 1939 revealed not only general information of value but, particularly, a 14 per cent increase in pounds of butterfat and 9.3 per cent increase in milk poundage produced by 120 Holstein-Friesian artificially produced daughters over their respective dams. The survey was sponsored by the operating divisions of the National Dairy Products Corporation.

The salient points of the survey are disclosed in the form of 24 questions circulated among members of breeding associations for the purpose of gathering ideas based upon their seven years of experience. The information collected is condensed into six basic problems, to wit:

- 1) The finding of good, highly fertile bulls.
- 2) Prolonging the usefulness and effectiveness of the bulls.
- Convincing new members that some cows fail to breed from one or even two inseminations.
- 4) Correcting false impressions to the effect that artificial breeding is used when the natural method fails.
- 5) The too low conception rate in infertile herds.

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Proper appreciation of the part played by inheritance.

The success of artificial insemination rests with the skill of the operators and the type of coöperation they are able to obtain from the dairymen.—E. J. Perry, extension dairyman, and John W. Bartlett, husbandman, New Jersey Agricultural Experiment Station: A Survey of Results of Artificial Breeding of Dairy Cattle in New Jersey. Station Circular 489. November, 1944.

## Bilateral Cryptorchid, and Two Fees

Part of the interest in this case lies in the fact that the horse was owned by a cocksure owner who had to learn the hard way.

An 8-year-old ridgeling was presented for castration with no more history than that he had been recently purchased, and behaved like a stallion.

Two ounces of chloral hydrate were dissolved in a gallon of warm water, and administered with the stomach tube. The horse was cast, and anesthesia completed with chloroform.

With the operative field in direct sunlight the area was carefully examined. The left side of the scrotum presented a well defined dimple, and the right side a small scar, but there was no evidence of either testicle.

The area was carefully prepared, and an incision made on the left side. Fluctuation indicated the position of the inguinal ring, and the tissue was carefully broken down until the internal ring was clearly outlined.

With each expiratory movement, a rounded object was forced against the internal ring, and this was grasped with a rat-tooth forceps at the proper moment. As expected, it proved to be the tail of the epididymus, and the left testicle was soon removed.

As I was preparing to incise the right side to determine what the scar meant, the owner objected on the grounds that double cryptorchids are rare and that the presence of a scar was evidence that the right testicle had been removed. His helpful neighbors enthusiastically seconded his opinion.

Despite my statement that they took too much for granted, and my emphatic warning that such an incision might save him the price of another operation, he preferred to take that chance. I was somewhat provoked, but gave in.

At the end of three weeks, there had been no change in the behavior of this horse, so I was again engaged to operate. Under the scar on the right side, the testicle was trapped in the internal abdominal ring and the epididymus in the inguinal canal.

The epididymus was held in the left hand, and following it as a guide the right hand was directed up the inguinal canal. The testicle was hooked with the curved finger, withdrawn, and amputated.

The horse quieted down and recovery was complete and uneventful. When the owner paid the second fee he smiled and remarked that sometimes education comes the hard way.—Chas. H. Haasjes, D.V.M., Shelby, Mich.

Hereford hogs are the result of crossing purebred Duroc Jersey sows with a purebred Poland China boar, and then following a careful program of linebreeding. They are now recognized as a new breed.

Bullets passing cleanly through the parenchyma of the lungs cause little hemorrhage and when the original shock of the injury has passed, there are remarkably few symptoms. The elasticity and retractility of the parenchyma added to low vis a tergo in the pulmonary circulation are mechanical factors which help to prevent bleeding from the lung wound.—From Field Surgery in Total War.

Should cows be bred early in estrum or late? Dr. Don Gildow sheds light on the problem (Western Dairy Journal) with data to show that the percentages of conception were: when bred early 44 per cent; when bred late 75 per cent; when bred near the middle of the period 82 per cent; and when bred early and late 84 per cent. He recommends rebreeding, if estrum is still evident, eight to twelve hours after service. He found that it required 3 services per conception when an old bull was used on heifers, but only 1 when a young bull was used.

# CLINICAL DATA

### Clinical Notes

Vitamin K is not stored in any significant amount in the human body.—Science News Letter.

A new sulfa drug, sulfamylon, is said to be particularly effective in combating gas gangrene.

I have obtained exceptionally good results in treating obstinate skin diseases in dogs infected with whipworms by removing the cecum.—C. P. Zepp, D.V.M., New York.

Mayhew, at Louisiana State University, failed to develop a resistance to *Hemonchus contortus* in lambs by injections of the saline extracts.

Semen to be used for artificial insemination loses some of its ability to live at low temperatures with each increase in the rate of dilution.—Salisbury, Elliott, and Van Demark, in J. Dairy Sci. The western type of equine encephalomyelitis virus has been isolated from chicken mites (*Dermanyssus gallinae*) in nature during an outbreak by S. E. Sulkin, Dallas, Texas.

The belief that sulfonamides have an affinity for bacteria only is severely jolted by the fact that hens fed sulfanilamide lay shell-less eggs. To the biologist, nothing more should be needed to justify the warnings to use sulfa drugs with caution.

A bibliography on infectious equine encephalomyelitis has just been issued by the pathological division of the BAI as a supplement to similar lists issued Nov. 1, 1941 and May 1, 1943.

Preliminary tests with sodium fluoride indicate that 1 per cent thoroughly mixed with the feed consumed for one day will remove 96 per cent of the roundworms from pigs. It should be used cautiously under field conditions until more information is available.—Agricultural Research Administration.

The feces of horses infected with Habronema muscae are infective for the larvae of Musca domestica for nine days, according to the findings of workers at the Institute of Biology, Sao Paulo, Brazil.

Attempts are being made to stabilize penicillin so that it may be administered by mouth instead of injected either intravenously or intramuscularly. Preliminary experiments indicate that about three fourths of the penicillin is destroyed by the acids in the gastric juice, but that raw eggs offer a stabilizing effect in the face of this acid reaction. Raw egg has the added value of prolonging the action beyond that of muscular injection.—From J. Am. Med. A., April 14, 1945.

Septic sore throat and other hemolytic streptococci infections (human) yield to penicillin in twenty-four hours if given early, and continued until danger of relapse has passed. Also, the grave sequels (rheumatic fever, nephritis) are prevented.—

Condensed from Science New Letter, February 24.

The use of gonadotropic hormone stimulates the production of a specific antihormone, and that this is a true immunological phenomenon is the conclusion reached by Jeanne H. Chase, as reported in the Yale Journal of Biology and Medicine, (March, 1945).

## Nonparasitic Skin Diseases of the Dog

C. P. ZEPP, D.V.M.

New York, New York

Nonparasitic skin diseases of the dog as differentiated from parasitic include all skin irritations which cannot be directly attributed to parasitic causes, such as the sarcoptic mite, the Acarus mite (Demodex folliculorum), and fungi. The active type of parasite, such as fleas, lice, and ticks, will have to be considered as coming under both types of skin diseases, since they usually produce a skin irritation for which a cure cannot be effected by using only an agent to remove them. This is particularly true in the case of the flea.

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The principal causes of nonparasitic skin diseases, according to their frequency, are contact irritants, constitutional disturbances (gastrointestinal, endocrine, renal), diet, bacteria, and heredity.

For this discussion, I shall classify non-parasitic skin diseases into two types: dermatitis and eczema. A dermatitis is a simple inflammation of the skin characterized by dryness, seborrhea (dandruff), papules, and alopecia, which may or may not be accompanied by itching. Eczema, the most frequent and serious of the two, is a noncontagious, acute, or chronic, inflammation of the skin, manifested by erythema, vesicles, scabs, or crusts, papules or pustules, and is usually accompanied by acute itching. The skin in eczema cases may be thickened, pigmented, and moist.

A description of the physical differential diagnosis of sarcoptic mange and eczema would be of value, since it is difficult to detect the sarcoptic mite with the microscope and the condition produced by this mite is easily mistaken for eczema. Sarcoptic mange lesions occur mostly on the head, around the eyes and nose, the tip and base of the ears, and on the extremities, while eczema appears to have an affinity for parts of the body having hard skin, such as the area around the base of the tail and along the back. In sarcoptic mange,

the dog usually chews at the affected parts, rather than scratches, as in eczema.

### CAUSES AND TREATMENT

Contact Irritants.—To explain my reasons for listing contact irritants first, as the cause of nonparasitic skin diseases, a review of the anatomic structure and the physiologic functions of the skin may help. The skin consists of (1) cutis, (2) epidermis, (3) sebaceous, and (4) blood and nerve supply.

The true skin of the dog, the cutis, is the principal structure. It is underlaid with fat and connected to the underlying parts by the subcutaneous tissue. In the cutis are found the sweat glands, which open through the epidermis into the hair follicles. The sweat glands are principally developed in the pads of the feet, sides of the nose, and along the back. There is a question as to their presence in other parts of the body; some anatomists claim they are present, but only function at certain times.

The epidermis is made up of squamous epithelium, which is stratified and goes through a cycle of changes. During these changes, an oily layer is produced, which waterproofs the skin, and the outer layer of cells forms a horny crust to protect the skin from outside irritants.

The sebaceous system embraces the hair coat and oil glands. The sebaceous glands secrete a fatty substance, sebum cutaneum, which serves as a protection against moisture. The sebaceous glands are best developed in the short- and rough-haired breeds, whereas the sweat glands are relatively better developed in the long- and fine-haired breeds. The hair of the older dogs changes twice a year. The change is very rapid and in most cases a pruritus is evident at the time of shedding.

The penetration of medicants takes place through the hair follicles. Some authors claim the penetrability of the dog's skin is greater than that of man's, therefore, this fact must be considered in the use of toxic applications.

Presented at the eighty-first annual meeting of the American Veterinary Medical Association, Chicago, Aug. 22-24, 1944.

From a study of the dog's skin, we find that the short- and rough-haired dogs, such as the Fox Terrier, Sealyham, Wire-Haired Fox Terrier, and the Scottie, have the sebaceous glands which secrete an oily material, more highly developed than the longhaired dogs. Nature has given them this oily coating to protect their skin from contact irritants, such as heat, the sun's rays, dust, moisture, bacteria, and poisonous plants, coming into direct contact with the skin proper.

The effect of fleas is more pronounced when the natural oil protection is destroyed. It is a recognized fact that dogs with an oily skin will not harbor fleas.

It is estimated that, after the destruction of the oily coating, contact irritants produce, directly or indirectly, from 50 per cent to 75 per cent of the skin cases. Many other veterinarians agree with this conclusion.

Fashions as well as climatic conditions play a part in destroying the natural oily protection. Fashion for the terrier type of dog keeps the coat short by plucking and clipping during the summer months, thus allowing irritating factors to come into contact with the skin. Also, these dogs are frequently washed with an agent which destroys the natural oil.

Doubtless, you will agree that the terrier type of dog (Wire-haired Fox Terrier and the Scottie), which is likely to have this oily protection destroyed, presents the most baffling skin disturbances during the summer months. Long-haired dogs, which have been clipped and washed frequently, are a similar problem. Another observation is that a bland oil will stop scratching in such cases until they are washed. You may have noted that the majority of hospitalized cases during the summer months are skin diseases. If you have made these observations, I feel you will agree that summer climate rates first as the causative factor in skin diseases.

The amount of irritation caused by external agents may vary from mild dermatitis to acute eczema. In the older dog, having suffered a number of summer exposures to these irritants, the irritation is usually quite severe, while in the younger dog, which has more resistance, the condition is milder.

Three factors should be considered in treating dermatitis and eczema due to contact irritants: (1) The neurogenic factor. which usually is the result rather than the cause, should be corrected immediately for the prevention of further irritation from biting and scratching. (2) Restore the natural oily condition of the skin. (3) Advise preventive measures.

Jour. A.V.M.A.

To treat the neurogenic factor, give, per os, phenobarbital 1/4 gr. to 3/4 gr. and metropine (methyl atropine nitrate) 1/250 to 1/60 gr. morning and night according to the size of the dog. This treatment is continued until the dog is comfortable, which, as a rule, is about twenty-four to forty-eight hours. Metropine is a derivative of atropine. It is much less toxic and has only 1/10 the mydriatic action of atropine. After the sedative treatment, give one of the following: one half teaspoonful of phosphate of soda (noneffervescent) in the food once a day, or 10 to 30 gr. of calcium lactate or gluconate, or the following prescription: powdered nux vomica 1/10 gr., arsenic sulfate (red) 1/60 gr., potassium bitartrate 1 gr., sulfur 4 gr., one capsule morning and night.

In severe hypersensitivity of the skin, give an injection of morphine and atropine to quickly quiet the patient; later, this is followed with the phenobarbital and metropine if necessary.

The second step in the treatment is to apply an oily lotion to soothe the skin and restore its natural oily condition. In mild cases, most any bland oil, such as olive oil, coconut oil, lanolin oil, or an emulsion of oils will accomplish this. There are a number of oil emulsions which will give good results if thoroughly applied and allowed to remain on the body a sufficient length of time. For hospitalized cases, in which an oily lotion is not objectionable, a home made lotion of sulfur and olive oil or linseed oil, 1 part sulfur to 6 parts oil, is good.

In cases of severe irritation, aggravated by pyogenic or fungoid factors, a lotion that is disinfectant as well as soothing is required. Crude oil is a good disinfectant and sulfur has both soothing and bactericidal properties. The following is the formula I use for these cases: flowers of sulfur, 1 part; glycerin, 1 part; crude oil, 2 parts; and white mineral oil, 4 parts. I apply the lotion to one third of the body each day. Usually 2 complete applications are sufficient in the period of about six days. I then allow the lotion to remain on

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the body for another three or four days before washing.

Caution must be used in selecting the lotion and the manner of application because of the tendency of the animal to lick it off, and also because of the great absorptive power of the dog's skin. Too strong a lotion will irritate the skin; this is often the cause of recurrent attacks.



—Photos by the Author Fig. 1—Acanthosis nigricans of the anal region. Patient prepared for ablation of the infected anal glands.

The third factor, prevention, is important. By advising preventive measures, you will, in a large percentage of recurrent attacks, throw the responsibility on the owner, instead of having him feel you lack knowledge. The advice should include such things as not clipping or plucking closely during the summer months, not washing too frequently with too strong a soap, not exposing the dog to the hot sun and dry air, not allowing the dog to run in the grass and weeds, preventing fleas, etc.

Constitutional Disturbances.— In this group, gastrointestinal disturbances rate first, by producing intense generalized pruritus which causes the dog to bite, scratch, and blemish the skin. The pH of the intestinal tract controls the absorption of calcium, which is an important skin sedative and antiphlogistic. Pilsbury has shown that lactic acid, the end product of carbohydrate metabolism, if formed in excess, may be the cause of irritating reactions, since the skin stores carbohydrates. Also, skin irritation

may be due to intestinal intoxication, resulting from faulty functioning of the liver or improper elimination of the bowels.

For general treatment of the previously mentioned disturbances, in which the specific cause cannot be determined, brewer's yeast, in large doses, is beneficial. In cases of deficient biliary secretion, administration of calomel or bile salts proves of value.

Two other conditions which may contribute to skin diseases through the intestinal tract are parasitism and bad teeth. Parasites may contribute in a number of ways: through their neurogenic effect, which causes the dog to scratch and chew the body, resulting in mechanical irritation, and by their toxins, causing an irritation of the intestinal tract, intestinal disturb-



Fig. 2—The same patient as shown in figure 1, six months after the operation.

ances, and general debility. For these reasons all dogs suffering with skin diseases should be checked for worms. Whipworms in large numbers, due to their toxic effect, are especially responsible, either primarily or secondarily, for many of the obstinate skin disease cases. Because they are difficult to cure by medication per os, their importance as a factor is often considered slight. This is a mistake. I have obtained exceptionally good results in curing obstinate skin diseases in dogs infected by whipworms by removing the cecum. I am not sure that lesions of the cecum do not play a part. I have had a number of dogs infected with Filaria immitis suffering with

chronic eczema which cleared up after treatment.

Diseased teeth play an important part in causing intestinal disturbances and in spreading infection on the body from chewing and biting. For example, eczema and infection of the feet are often caused in that manner. Correcting the sanitary condition of the mouth by cleaning, and if necessary extraction of the teeth, should be considered in obstinate cases and ones of obscure origin.

The endocrine apparatus is important in skin behavior and hair growth. The parathyroid hormone may, through its effect on calcium metabolism, influence the skin irritability. I have observed good results in a large percentage of cases after giving 1/20 gr. of thyroid extract, morning and night. A disturbance in the sex hormones has a decided effect on the hair growth, both in the male and the female. I cannot explain the exact pathology, but have observed that in cases of general alopecia in the male, one will usually find a diseased gonad. It may be a tumorous or atrophied testicle or an enlarged prostate. In the female, it may be a disturbance expressed either by a decided enlargement of the vulva, with or without discharge, or an irregular heat period. All the dogs with the previously mentioned conditions may not show a loss of hair, but I have found that practically all dogs with alopecia have one or more of the sex disturbances, and if the diseased parts are removed the alopecia will disappear.

Here I shall refer to a case, reported by Dr. James A. Edgett, of a 5-year-old male Pomeranian, afflicted with alopecia. dog was a cryptorchid; the right testicle could be palpated in the region of the external inguinal ring as a small nodule (atrophic). He treated the dog with 12 intramuscular injections of 5 mg. of testosterone propionate (Perandren), given at two- and three-day intervals. He reported that at the end of four months the skin had lost its dark pigmentation and had attained a normal growth of hair. He also reported that the right atrophied testicle was not appreciably influenced by the series of injections, and that it seemed reasonable

to expect that the hormonal imbalance or deficiency would reassert itself.

My experience with treatment has been similar to his, except that I did not get as good results, and found that the alopecia does reoccur after treatment is stopped. For this reason I do not feel that the alopecia results from a deficient hormone secretion, but from an abnormal secretion of the diseased organ. We know that a dog can be normal with one normal testicle and the other removed. Surgical removal of the diseased part resulting in a cure also appears to indicate that the condition is due to an abnormal secretion.

Alopecia usually occurs in old dogs. For that reason, I caution you to make sure that both testicles are not involved. If in doubt, remove both surgically.

The previously mentioned sex imbalance may cause skin disturbances other than alopecia. I have had cases in the female with a generalized poor coat and absence of hair around the eyes, pudendum, and abdomen. On these cases, I performed a complete hystero-oöphorectomy, usually resulting in recovery. A positive diagnosis previous to the operation is often impossible. In one particular case, the only symptom of female disturbance was that male dogs appeared to be attracted to the patient at all times. The owner reported that the bitch had normal heat periods. After the laparotomy, examination of the horns revealed them to be pale gray and about 1/2 inch in diameter. The ovaries were enlarged and cystic. The Fallopian tubes contained a thin, grayish, cloudy fluid, and their walls were thin and almost transparent.

In other cases, I found cystic ovaries and the tubes slightly enlarged but firm, red within and filled with a granular tissue similar to a tumorous mass.

Surgical removal of the diseased parts is the only specific cure for skin diseases resulting from sex disturbances.

Kidney disturbances such as nephritis may cause dermatitis or eczema. The skin lesions usually result from the generalized pruritus, which causes the dog to scratch, lick, chew, or rub against hard objects continually. In all cases of intense itching, especially in old dogs, an examination of the urine should be made. The treatment should be the same as for any type of skin irritation. First quiet the neurogenic factor with a sedative and apply a soothing lotion. Then, attempt to correct the

<sup>&</sup>lt;sup>1</sup>Edgett, James A.: Alopecia in a Pomeranian Due to Hormonal Disturbance. North Am. Vet., 24 (1943): 675, 676, 680.

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kidney ailment. Usually, diet is the only treatment for skin diseases of renal origin.

Diet.—A large precentage of dog owners blame diet for most skin diseases. I disagree. I do agree, however, that faulty diet, such as overfeeding, a too high intake of carbohydrates, low grade protein, etc., may influence poor elimination, or hepatic and renal insufficiency, which may cause pruritus.

Most people consider fat harmful to dogs. That is not correct. A proper amount of fat in the diet is necessary to the health of dogs. Fats supply the natural oil for the skin and I have obtained some good results in preventing skin diseases by feeding an extra amount of fat.

The treatment for skin diseases resulting from improper diet is the same as any other type except that improper diet must be corrected in order to prevent recurrent attacks.

Bacteria.—The skin has a permanent bacterial population in its outer layers, including staphylococci, streptococci, and fungi, both pathogenic and nonpathogenic. The dog's natural oily skin will act as a barrier to infection from most of the skin bacteria. Here again, it is important to preserve the dog's oily coating as a preventive measure.

Pus is the most distinctive characteristic of bacterial dermatoses. Pyogenic processes by the ordinary bacteria are usually secondary to other conditions, such as the destruction of the natural oily layer of the skin, or a generalized pruritus, which causes the dog to rub, scratch, and chew its body and thus infect the deeper layers.

Ordinary bacterial dermatoses will readily respond to the treatments previously described.

Besides the bacterial flora on the dog's skin, there are other sources of infection, such as the teeth and anal glands, or the sheath in the male and the vulva of females suffering with diseased sex organs. I believe these parts are the source of infection for the following diseases: acne, furunculosis, interdigital infectious eczema, eczema of the ear canal, eczema of the vulva and surrounding parts, acanthosis nigricans, and similar diseases. In my opinion, these diseases are produced by a virulent pathogenic organism, which is rubbed into the skin. They do not respond well to any treatment, or if so, they do not remain cured. At least, that has been my

experience. A close study of the parts affected and especially the parts first affected, shows that they are the parts which come in contact with one of the sources mentioned, either by the dog's habits or from natural consequences. For example, acne of the nose, I think, is caused by the common habit of nosing diseased anal glands or sheath. Infectious interdigital eczema perhaps is caused by chewing at the feet with diseased teeth. In the cases of eczema of the vulva and surrounding parts, or acanthosis nigricans, any discharge from the vulva or anal glands would be rubbed into the tissue of the buttocks when sitting down.

In the treatment of these pyogenic skin diseases, a thorough examination should be made to determine the source of infection. Sometimes there may be more than one source, such as infected teeth or anal glands and female discharge or all combined. To obtain a permanent cure, the source of infection must be removed. Surgery is usually necessary. I have selected acanthosis nigricans as an example to describe.

Acanthosis nigricans.—This condition is a symmetrical, bilateral thickening of the skin. The lesions of the skin run in grooves crosswise or parallel, the skin usually is The disturbance usually starts around the anus, tail, rump, hocks, abdomen, and over the back. Long standing cases affect the lips, face, of the neck. This skin disease is more prevalent in the older dogs. The definite cause is not exactly known, and a lasting cure is not often obtained, relapses being common. I have obtained permanent cures in the majority of cases by removing the anal glands and treating the body with 5 per cent sulfathiozole cream. My reasons for removing the anal glands are founded upon the following observations. The anal glands in these cases are usually filled with a yellowish, green pus, which is fluidlike and may exude from the glands without pressure. Another observation is that the disease spreads symmetrically, starting around the anus, where the exuded material first soils the skin. Later, it spreads to the tail, hocks, and abdomen, the areas into which the gland material is rubbed when the dog is in a sitting position or lying on its abdomen. The areas around the face, lips, and eyes contact the irritated region of the anus by the dog's natural habits.

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The identification of the specific agent if left to the bacteriologist, however, it may be a coccus of some type, possibly a staphylococcus, since the skin responds to sulfathiozole treatment after the glands are removed. A permanent cure is not obtained by packing the glands and treating the skin.

In conclusion, I wish to stress the importance of determining the cause of non-parasitic skin diseases and advising as to prevention, instead of only treating the external lesions. Unless the cause is corrected and preventive measures taken, the majority of cases will reoccur.

#### Differential Diagnosis of Bovine Brucellosis from the Bactericidal Action of Blood Plasma

Suspicious or low-titer reactors are found frequently and the future of such reactions in herds that have become recently infected or are actively aborting, cannot be predicted. Huddleson now reports a test by means of which the infected and non-infected cows can be differentiated, one from another, on the basis of bactericidal and growth-inhibiting action of bovine blood plasma on Brucella abortus. The test group contained normal animals and animals showing different agglutination titers from a previous natural exposure, or following the injection of a killed Brucella suis vaccine.

#### PROCEDURE

Blood was collected from the jugular vein by means of a sterile needle into sterile



-Acme Photo

Skinny, riderless horses plod wearily through the littered streets of Aachen. This scene is typical of the city's appearance, now that the bitter battle has bottles containing 0.1 cc. of saturated sodium citrate for each 10 cc. of blood. Plasma was separated from the cells by centrifugation and tested immediately. If necessary, the sample may be stored at 4 C. for as long as ten days without impairing its bactericidal action.

A single smooth strain of *Br. abortus* was used in all experiments. If a rough or dissociated culture is used, plasma from both infected and uninfected animals will inhibit growth to an equal degree. Tubes were incubated for forty-eight hours at 37 C.

#### RESULTS

The method used reveals distinct differences between the action of plasma of normal, immune, and infected animals. Results were recorded at twenty-four and forty-eight hours. The action of the plasma was measured by the absence or degree of growth (turbidity) in the tubes, as compared with a control tube inoculated at the same time. The organisms multiplied sufficiently during the first twenty-four hours to produce considerable turbidity in a control tube of the medium. The medium remained clear in those tubes in which growth was completely inhibited.

Plasma samples from most young calves inhibit growth in all dilutions up to 1:160, except that before the ingestion of colostrum the blood possesses no growth-inhibiting property.

Plasma samples from heifers and adult cows after exposure to, and recovery from, natural infection inhibit the growth of Br. abortus in a higher dilution than those from normal ones.

Not in a single instance has a plasma sample from infected animals inhibited the growth of *Br. abortus* in any of the dilutions used routinely (1 to 10, 20, 40, 80, 160, 320, and 640).

Thus far, the growth inhibition test has proved to be a highly accurate means of identifying both young and adult cows that are infected with Br. abortus, and whose agglutination titers range from 1 to 25 up to 1 to 5,000. The test can be easily developed into a routine laboratory procedure, and by its application bring about the retention of many cattle that might otherwise be disposed of because of the possibility of infecting other cattle.—From Science, April 6, 1945.

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#### Allergic Dermatitis

Allergic dermatitis is a hazard of veterinary practice. Although once developed, it cannot be completely cured, the sensitivity can be controlled through having a working knowledge of its inciting causes. After making the round of skin-disease specialists, the author found that knowledge of

#### Allergy from Horse Saliva (?)

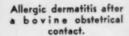


-Photo by Edward Merillat, 1901

Forty years ago when many veterinarians practiced dentistry in horses extensively, an eruptive vesico-pustular dermatitis of their hands and arms was of common occurrence. At that time, two Chicago veterinarians so affected were subjected to critical examination by the Columbia Diagnostic Laboratory, where the trouble was diagnosed, tentatively, as an unknown infection, whereupon Health Commissioner W. A. Evans, struck with the characteristic exacerbations and remissions of the two cases studied, pronounced the trouble "an idiosyncrasy"—the word allergy was not coined until 1906.

its nature was lacking among most of them. The complex allergens to which veterinarians are exposed in their daily work were not considered. One such specialist, however, outlined a common sense approach to the condition that helped to keep the trouble controlled. Among the sensitizing agents are injected foreign proteins (vaccines, bacterins, antitoxins), animal tissues and fluids, among which is horse saliva (see, figure), chemical ablutions which damage the protective coating of the skin by repeated contact, sensitizing fungi and bacteria on moldy casting harness, certain kinds of rubber gloves, and contact with certain foods (eggs, pork, fish, fresh bread, fats, carbonated beverages, etc.). The occupational allergies of veterinarians are expressed by rash, intense itching, burning,

vesication, and sores which soon become complicated with secondary infections. As to treatment, the author found calcium lactate and sodium bicarbonate, internally, helpful in warding off and modifying the severity of an attack, and advises care in preserving the protective cutaneous epithelium by washing with mineral oil or cold cream in lieu of ordinary soap. The specific allergy caused by Brucella organisms is





pointed out. Citing Huddleson, this type may be helped with a high titer Brucella antiserum. Determine the cause and abide by a sound program of diet and use mild protective applications on the hands.—
[S. F. Stapleton, D.V.M.: Allergic Dermatitis. Jen-Sal Journal, 28, (Jan.-Feb. 1945): 4-5.]

That there is need for a new concept of the etiology of necrotic enteritis in swine is the conclusion drawn by Gwatkin and Moynihan, after employing 14 strains of Salmonella suipestifer on 102 pigs in attempts to reproduce the disease.—From Canad. J. Comp. M. (1945).

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#### Sulfonamides in Pullorum Disease

The widely advertised contention that drugs are worthless in the treatment of poultry disease appears to need revision. Experiments carried out at the University of Illinois showed that the mortality of artificially infected chicks was reduced markedly by medicating the mash with determined concentrations of various synthetic sulfonamides, and that the benefits derived were apparent in the adult birds treated when I day old. The best results were obtained with sulfadiazine and sulfamerizine. The differences in mortality between treated and untreated chicks were striking. In 36 untreated chicks, the mortality was 77.8 per cent, whereas in 34 chicks treated with a mash containing 1.0 per cent of sulfadiazine, the mortality was 11.8 per cent. Still more striking reduction in the death rate was obtained with sulfamerizine. In chicks fed a mash containing 0.5 per cent of this drug, the mortality was reduced from 94 per cent to 2 per cent .- [J. M. Severens, E. Roberts, and L. E. Card, Department of Animal Husbandry, University of Illinois: The Effect of Sulfonamides in Reducing Mortality from Pullorum Disease in the Domestic Fowl. Poultry Sci., 24, (March, 1945): 155-158.]

#### Acetonemia as a Complication of Anaplasmosis

It may be of interest to fellow practitioners to know that in Puerto Rico, the writer has often seen acetonemia as a complication of anaplasmosis in cattle. The diagnosis of both diseases in each case was confirmed by laboratory examination of blood films for anaplasma and of urine samples for acetone bodies, using Rothera's test. Thus far, a close relation was observed between the percentage of red blood cells infected with the parasite and the degree of acetonemia present.

The treatment consisted of the administration of sodium cacodylate, 45 grains per 100 lb. of body weight, in one liter of 50 per cent dextrose intravenously, followed by adding plenty of water with sugar-cane molasses to the diet. Some severe cases responded favorably while others, even

with only mild parasitic infection and acetonemia, did not recover.

Conclusions.—In so far as the writer knows, textbooks or journals have not mentioned acetonemia in connection with anaplasmosis. Other practitioners in this island have never reported such findings. However, this may be accounted for, since the writer has been the only one to carry on urine analysis in cattle as a routine procedure during the last two years.

It would be of interest if practitioners, in areas infested with anaplasmosis, would verify the presence of acetonemia where cattle are suffering from anaplasmosis, to determine how constant is this complication.—C. A. Lopez-Pacheco, D.V.M., Hopitale para Animales, "Lopez-Diaz," Hato Rey, Puerto Rico.

#### Screw-worm in Northward Areas

Veterinarians of the South and Southwest need no reminder about the screwworm (Cochliomyia hominivorax, Coq.) season. Only those in the more northerly areas need forewarning about the experience of 1943, when a severe drought caused a large movement of southern and southwestern cattle northward and with it a visitation of the screw-worm. Important outbreaks occurred in Missouri, Kansas, Oklahoma, Arkansas, Arizona, and California, and lesser ones in Nebraska, Illinois, Iowa, Wisconsin, and Indiana, where previously that plague was either unknown or too rare to be noticed. One has but to remember the approved remedy-Smear 62 (= diphenylamine and benzene) developed by workers of the U.S. Bureau of Animal Industry. Smear 62 is credited with having taken considerable of the "bite" out of the screw-worm. It's a repellent of both the fly and its larva.

Hog cholera often attacks herds during periods when owners have postponed protective measures, warns the Agricultural Research Administration. Early vaccination is recommended because there is less adverse reaction, less serum and virus are required, and the animals are conveniently handled while young.

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#### Actinobacillosis in England

Actinobacillosis in sheep is commonly known in England as "cruels" or "king's evil." It occurs in many flocks, but seldom takes a heavy toll, although it has been reported in almost epizoötic proportions following foot-and-mouth disease outbreaks.

Infection gains entrance through the broken skin or injured mucous membranes: following wire cuts, balling-gun injury, or horn injury from fighting. It is characterized by enlargement of the lymph nodes of the head, followed by abscessation and ulceration. It often terminates in thickening of the skin and subcutaneous tissues of the face, with formation of multiple abscesses.

Sometimes, the feeding of potassium iodide or the injecting of sodium iodide corrects the trouble, which is caused by Bacillus purifaciens.—From report by A. Wilson Taylor. Gilmerton, Midlothian, England, in J. Comp. Path. & Therap. 54 (1944), 228 to 237.

#### Fluctuations in Numbers of Trichomonas Foetus

An interesting and logical theory for the fluctuations in numbers of *Trichomonas* foetus found in the vagina during initial infections is presented by Hammond and Bartlett, Beltsville, Md., in the *American* Journal of Veterinary Research (April, 1945). They also outline a way to use this theory in making a diagnosis in a questionable herd.

Coitus with infected bulls served as their method of inducing initial infection, and they found that females so exposed carried Trichomonas in the vagina about one week later. The large number found for about ten days, gradually declined. The cases were characterized by early return of estrum—the nineteenth to the thirty-second day. In no case did Trichomonas disappear before this period of estrum, and the average duration of infection was eighty days.

Following the first estrum after expossure, and all during the remainder of the period of infection, Trichomonas were scarce early in the cycle, became abundant during the two or three days before estrum, and then receded abruptly.

On the basis of this behavior in known

cases of initial infection, the authors formulate the theory that when the specific organism does not appear in the vagina until several weeks or months following exposure, or when pregnancy occurs and is followed either by abortion at two to five months, or proceeds uninterrupted, such females have been previously infected one or more times.

Initial infection is followed by rapid multiplication in the susceptible tissues of the vagina, cervix, and uterus. Sometimes the latter organ is infected at the time of exposure, but in other instances it may be invaded at a later date by organisms from the vagina. The tissues of the vagina and cervix develop a resistance in two or three weeks, and thereafter do not support multiplication. The tissues of the uterus develop resistance more slowly, so that growth continues for a longer period in this organ. The periodic appearance of the parasite in vaginal samples in the later stages of infection is explained by the discharge of material from the uterus incident to the uterine contraction associated with the appearance of estrum.

The value to the veterinarian in the field lies in the time suggested for making diagnostic examinations. Following initial exposure, such examinations can best be made at from seven to nineteen days after the exposure, but in cases of longer standing the examinations should be made two or three days before the expected onset of estrum.

When a hunting dog encounters a scent, how does he know in which direction to go? A possible explanation is that heel and toe carry different scents, particularly if the animal has claws. Then, too, the toes should retain odor longer, because in running the claws dig in. The heel and toe scents, then, may vary in quality as well as intensity; and when the dog moves his nose back and forth over the scent he may be trying to determine which way he should go. And a good dog is seldom found to be going in the wrong direction.—From Science Digest, May, 1945.

Turkeys will be more abundant in 1945 than in 1944, and will supply about 8 million more pounds of meat this year.

# NUTRITION

MATERIAL FURNISHED BY THE COMMITTEE ON NUTRITION

# Congenital Malformations, Syndactylism, Talipes, and Paralysis Agitans of Nutritional Origin in Swine

O. BURR ROSS, Ph.D., PAUL H. PHILLIPS, Ph.D., G. BOHSTEDT, Ph.D., AND TONY J. CUNHA, Ph.D.

Madison, Wisconsin

The object of this investigation was to study the physiological effect of certain rations on the sow through the reproductive

and lactation periods.

Experiments conducted by Evvard,1 beginning in 1910, were among the first to demonstrate that young sows fed only on corn and salt during the gestation period were unable to produce strong pigs. Snyder,2 Hart and Steenbock,3 Grimes,4 the Arkansas Experiment Station (Martin<sup>5</sup>). Morrison, Fargo, and Bohstedt,6 Martin,7 and others, found that a ration of corn alone fed pregnant sows was not adequate to support reproduction and lactation. Aubel, Hughes, and Lienhardt<sup>8</sup> demonstrated some beneficial effect from feeding 10 per cent wheat germ meal to sows receiving a ration of yellow corn, alfalfa leaf meal, tankage, and steamed bone meal. The Michigan station (Gardner<sup>9</sup>) found that alfalfa leaf meal added to a ration of corn, barley, and oats gave satisfactory results during the gestation period of gilts.

Complete lactation records were not published with much of the work reviewed. Fishwick<sup>10</sup> first reported abnormalities in pigs whose dams were fed practical swine rations. Hogan<sup>11</sup> fed commonly used feedstuffs to sow pigs, weighing 50 to 100 lb., in pens with wood or concrete floors. Their litters were not thrifty in appearance when weaned, and the weaning weights were subnormal. Hogan and Johnson<sup>12</sup> reported that several years of experimentation had dem-

onstrated that a ration of corn, tankage, linseed meal, cod liver oil, and a mineral mixture could be improved by including wheat bran or wheat shorts. The same authors, 13 feeding essentially the same ration referred to above, found that sows produced pigs normal at birth and for a few days afterwards, but that they soon began to die, the deaths continuing until weaning time. These investigations showed that a defective ration may cause a sow to secrete defective milk. Hogan, Johnson, and Gahley.14 feeding a ration similar to the one used in the investigations reported above, described abnormalities of suckling pigs. Hogan and Johnson,15 reporting further on the use of concentrates commonly used in swine feeding, found that the mortality rate among the pigs was highest in the first week. Almost 90 per cent of all mortalities occurred in the first four weeks. These abnormalities included skin lesions, muscular incoödination and weakness, diarrhea, and collapse. Postmortem examination revealed fatty liver, fatty kidneys, and hemorrhagic areas. Hogan and McRoberts16 found that supplementing the same basal ration with certain vitamins decreased the number of mortalities and increased the weaning weight of the pigs.

#### EXPERIMENTAL

These experiments were designed to study the effect of a ration composed of yellow corn, expeller soybean oil meal, calcium carbonate, and common salt, with varied levels of alfalfa meal and/or other supplements upon the reproductive and lactation performance of the sow.

Young Chester White, Yorkshire, and Poland China sow pigs, evenly allotted and weighing

From the University of Wisconsin Department of Animal Husbandry and Blochemistry, Madison, Wisconsin

Reprinted from Journal of Animal Science, Vol. 3, (Nov. 1944): 406-414.

about 55 lb. on the average, were placed in pens with concrete floors and concrete outdoor runs. The basal ration and the basal ration plus 10 per cent alfalfa used in these trials is shown in table 1.

TABLE I-Rations Fed

Freds	FED UP TO 100 LB. LIVE WT.				
	BASAL RATION	BASAL RATION PLUS 10% ALPALFA MEAL		BASAL RATION PLUS 10% ALFALFA MEAL	
Yellow corn	76.35%	68.34%	82.85%	75.34%	
Expeller soybean oil meal Alfalfa meal	17.50% 5.00%	16.00% 15.00%	11.00% 5.00%		
Calcium carbonate	0.65%	0.16%	0.65%	0.16%	
Common iodized salt	0.50%	0.50%	0.50%	0.50%	
Total1	00.00%	100.00%	100.00%	100.00%	

The soybean oil meal was adjusted in the lot receiving the basal ration, plus 10 per cent alfalfa meal to make the total digestible protein of the two rations comparable. The calcium carbonate of the basal ration plus 10 per cent alfalfa meal was decreased to compensate for the amount of calcium carried by the added alfalfa. The calcium phosphorus ratio was approximately 1.25:1 for each lot. The above rations with a nutritive ratio of 1:5.2 were fed until the pigs averaged 100 lb. in weight. After reaching this weight, the protein level of the rations was reduced to give a nutritive ratio of 1:6.4. The pigs were fed ad libitum until they reached the average weight of 200 lb.

On the first trial, 4 sows were selected from each lot to be carried through gestation and lactation. They were continued on the same ration they had received during the latter part of the growing period.

The sows were bred at approximately 8 months of age. Care was taken to feed the sows well enough to keep them in good thrifty condition without becoming too fat. During most of the period after they had passed the 200 lb. mark, they were hand fed to restrict their feed intake. Difficulty in obtaining conceptions was encountered in some sows of both lots, and this necessitated several services for certain of them.

The sows were allowed to farrow in quarters that had been thoroughly cleaned. In order to prevent anemia, clean soil was placed in a corner of each pen, easily accessible to the young pigs.

To make the litters comparable, the number was reduced to 8 pigs each, with the exception of 1 sow receiving the basal ration plus 10 per cent alfalfa meal that was allowed to raise 9

pigs. Table 2 shows the data on the sows and the litters produced.

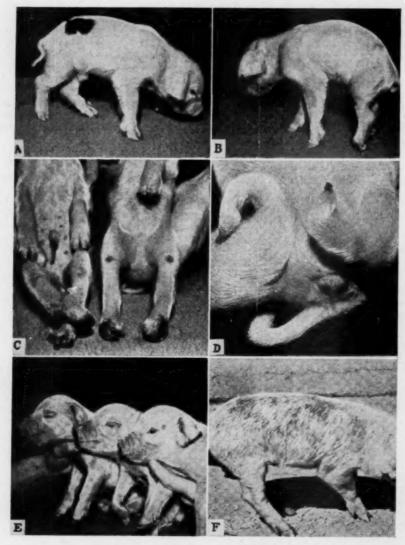
With the exception of the pigs from 1 sow, all the pigs farrowed on the first trial in both lots were normal at birth and equally vigorous. There was very little difference in the birth weight of the pigs in the two lots or in the total number of pigs farrowed per sow. One sow fed the basal ration farrowed 11 congenitally malformed pigs. They were large and vigorous otherwise. A decided weakness was apparent in the hind legs. This sow weaned 3 pigs and the leg weakness during the suckling period became steadily worse in each case.

Trial 2 was designed to further test practical supplements and certain vitamins or vitamin concentrates. Four gilts produced by the sows on the first trial fed the basal ration plus 10 per cent alfalfa meal were placed on the basal ration, and 2 on the basal ration plus 10 per cent alfalfa meal. Two gilts produced by the sows of the first trial fed the basal ration were continued on that ration. These gilts were never off concrete floors and never had access to green forage. They will be referred to as second generation gilts. The rest of the gilts used in trial 2 came from the herd and when approximately 55 lb. in weight were placed on experiment. These are called first generation sows. The second trial was conducted under the same conditions as outlined for trial 1.

The rations and supplements added are shown in table 2. The supplements, tankage, fish meal, molasses, dried brewers' yeast, soybean lecithin, inositol, and para-aminobenzoic acid were added to the rations indicated approximately ten days before parturition and continued for approximately twenty days after farrowing.

The incidence of congenital malformations was greater in the second trial, especially in the litters produced by the second generation sows. Four of the six second generation sows produced litters with 75 to 100 per cent abnormal pigs. Some malformations were observed in litters from first generation sows receiving either the basal ration, basal ration plus 10 per cent alfalfa meal, or basal ration plus 5 per cent bran and 5 per cent middlings.

The malformation observed in the newborn pigs of both trials ranged from the previously observed "sickle hock" in the mild cases to syndactylism and dysostosis resulting in vestigial limbs and paralysis agitans. Mild expressions of the disease appear as sharply "kinked tails" or sickle hock (fig. 1). The next stage showed the dysostosis of the hind feet which results in talipes, syndactylism, increase or decrease in the number of toes or dew claws, and extensive edema of the thigh region of the hind legs which may extend into the peritoneal cavity (fig. 1). The extreme condition was marked by vestigial hind limbs indicating complete dysostosis. In some of the severe cases, the



-From Journal of Animal Science

Figure I—Abnormalities caused by deficient naturally occurring ration. (A)—Early evidence of the deficiency—kinked tail and sickle hocks. (B)—Talipes and kinked tail—more pronounced deficiency. (C)—Talipes, syndactylism and edema of hind legs (right). (D)—Vestigial hind legs—extreme deficiency failure. (E)—Abnormal, center atrophic and blind, right hypertrophic and blind. (F)—Characteristic dermatosis and scurf over the back and ears.

eyes were also affected. In two cases, abnormally large eyes were observed. The hypertrophy of the eyeball was due to the accumulation of fluid within the eye itself. In one case, the eye had atrophied apparently as the result of rupture. In both instances, the pigs were blind. It is interesting that 2 of these pigs with talipes were afflicted with palsy or paralysis agitans, 1 severely and 1 mildly. The severe case exhibited the rotary oscillations of the head characteristic of the human case. These pigs could not nurse because of this affliction. They would stand and attempt to nurse until

exhausted and then lie down and rest for a while, rise and again attempt to obtain food. They died of starvation.

Most of the deaths in the litters of the sows fed the basal ration and the basal ration plus 5 per cent bran and 5 per cent middlings occurred during the first four weeks. The pigs became very weak and emaciated, scoured and ataxia of the hind legs appeared. Their hair was harsh and a brown exudate was found adhering tightly to the skin (fig. 1). Postmortem examination showed the stomachs to be full of milk. In some instances, there was evi-

NUTRITION

dence of gastritis. In those pigs surviving the four-week period, the skin became rough, wrinkled, and covered with a brown exudate, with considerable loss of hair. The pigs were unthrifty and exhibited in some instances a sickle hock condition. The pigs from the sows receiving the additional amounts of alfalfa meal were more thrifty looking, and the characteristic symptoms described in the afflicted pigs were in much less evidence.

An attempt was made to correct, by vitamin therapy,\* the condition described in the pigs of one litter produced by a sow fed the basal ration. No apparent growth stimulation was evident at the end of ten days as a result of feeding various vitamin combinations such as pyridoxine and choline; pyridoxine alone; pyridoxine and soluble liver extract;† and 1-20 liver concentrate powder.† Further supplementation with calcium pantothenate; calcium pantothenate and riboflavin; and wheat germ oil, produced no growth stimulation within a ten-day period.

Two of the sows fed the basal ration were rebred and allowed to farrow their second litter. These pigs were fed various B-vitamin supplements. Various combinations such as solubilized liver extract; alpha tocopherol; 1-20 liver concentrate powder; shark liver oil; wheat germ oil; ascorbic acid; riboflavin, choline chloride, calcium pantothenate, nicotinic acid, pyridoxine, and thiamin failed to bring about the resumption of growth and also failed to prevent the onset of symptoms previously described during a fifteen-day period. No improvement in appearance or weight could be detected within a sixteen-day period by the addition of either ascorbic acid or ascorbic acid and shark liver oil.

The sows fed the basal ration were in noticeably better flesh when the pigs were weaned than the sows receiving the additional amounts of alfalfa meal. This may have been due either to the fewer pigs suckled per litter, to the quantity or quality of milk produced, or to a relatively larger feed consumption. The sows receiving the additional amount of alfalfa meal lost weight rapidly and began to dry up after about six weeks. In a few instances, to protect the sows, it was necessary to wean the pigs before the eight weeks. Because of this condition, the pigs in most cases were as heavy at 6 weeks of age as at 8 weeks. This group of sows raised to weaning more of the pigs given them to suckle. The appetites of this group of sows were affected as was shown in the lower feed consumption, which became marked after about the fourth week. This lower feed consumption, apparently greater milk production, and bulkiness of the ration were considered responsible for the greater loss in weight in the sows receiving the basal ration plus 10 per cent alfalfa as compared to those on the basal ration.

#### DISCUSSION

The data presented in table 2 show that the sows fed the basal ration with the 5 per cent level of alfalfa meal in trial 1 did conceive and give birth to living young, which were normal except for malformations of the feet and legs. The number of pigs farrowed compared favorably with that of sows fed the basal ration plus 10 per cent of alfalfa meal (total alfalfa meal 15%). The sows of trial 1 fed the 5 and those fed the 15 per cent alfalfa meal rations produced pigs that weighed approximately the same at birth and they appeared to be of equal vigor. Considerable difference was seen, however, when the two lots of sows were carried through the lactation period. Those sows in trial 1, which received the basal ration plus 10 per cent alfalfa meal, weaned nearly 100 per cent more and 25 per cent heavier pigs at 56 days of age than the controls.

Those pigs produced by the sows fed the basal ration containing only 5 per cent alfalfa meal were very unthrifty in appearance, showed some digestive disturbances, ataxia of the hind legs, and abnormalities of the skin and hair. Conditions similar to these were described in suckling pigs by Hogan and Johnson<sup>13, 15</sup> when commonly used feedstuffs were fed to the sow in dry lot.

Vitamin supplements fed pigs suckling the sows which received the basal ration produced no stimulation in growth or change in general appearance. members of the vitamin B complex, at the levels fed, and given by capsule either singly or in combination, had no beneficial effect upon these pigs. Vitamins A and D, fed as shark liver oil, or vitamin E fed as pure alpha tocopherol or wheat germ oil, produced no outward change in appearance or increase in rate of growth. At the levels fed, neither 1-20 liver concentrate powder nor soluble liver extract powder changed the condition of the pigs. Ascorbic acid fed with or without shark liver oil did not benefit these suckling pigs.

Congenital malformations were observed in all litters from the sows used in trial 2. The incidence of malformations was greater

<sup>\*</sup>We are indebted to Merck & Co., Rahway, N. J., for the crystalline vitamins used.

<sup>†</sup>Wilson and Co., Chicago, Ill.

in those litters from sows fed the basal ration in trial 2 than those fed the same ration in trial 1. Some abnormalities were observed in litters of sows fed the basal ration plus 10 per cent alfalfa meal in trial 2, whereas no abnormalities were observed in sows receiving the same ration in trial 1. Those sows receiving the basal ration plus

to prevent the occurrence of the abnormalities or nourish the sow in such a way as to prevent the onset of the symptoms previously described in the suckling pigs.

Para-aminobenzoic acid or inositol, when added singly to the ration of sows ten days before parturition, failed to prevent the occurrence of congenital malformations or

TABLE 2-Effect of Ration on Reproduction in Swine

TRIAL 1	No. of sows	Av. no. PIGS FAR- ROWED	Av. BIRTH WEIGHT LB.	AV. NO. PIGS WEANED PER SOW	Av. wt. at 56 da of age lb.
Basal ration (1)		11.3	2.78	4.3	18.4
Basal ration+10% alfalfa meal	. 4	11.0	2.72	8.25	24.6
TRIAL 2					
Basal ration (2)	. 4	10.2	2.40	2.0	20.1
Basal+para-aminobenzoic acid*	. 2	6.5	3.05	1.5	15.3
Basal+inositol*	. 1	15.0	2.29	4.0	16.5
Basal+para-aminobenzoic acid+inositol*	. 2	10.0	2.43	2.5	28.0
Basal+1% soybean lecithin*	. 1	8.0	2.41	6.0	12.5
Basal+10% alfalfa meal (3)	. 5	10.4	2.30	2.2	18.4
Basal+10% alfalfa meal+5% tankage*	. 1	2.0	2.40	0	0
Basal+10% alfalfa meal+para-aminobenzoic					
acid+inositol*	. 1	8.0	2.72	7.0	15.3
Basal+5% bran+5% middlings (4)	. 3	11.0	2.31	1.0	9.0
Basal+5% bran+5% middlings+5% fish meal*.	. 1	11.0	2.69	0	0
Basal+5% bran+5% middlings+10% molasses*. Basal+5% bran+5% middlings+5% dried	. 1	4.0	2.05	0	0
brewer's yeast*	. 1	10.0	2,37	0	0

(1) One sow sterile; (2) two sows sterile; (3) three sows sterile; (4) four sows sterile. \*Supplements such as para-aminobenzoic acid, inositol, soybean lecithin, tankage, fish meal, molasses and dried brewers' yeast, were added 10 days before parturition and continued for 20 days after farrowing. Para-aminobenzoic acid was fed at the rate of 4.5 Gm. per sow per day. Inositol was fed at the rate of 10 Gm. per sow per day.

5 per cent bran and 5 per cent middlings reacted much the same as the sows on the basal ration, indicating the ineffectivness of bran and middlings to correct the deficiencies of the ration. The greater incidence of congenital malformation, poorer livability and smaller weaning weights of trial 2, as compared to trial 1, is partly attributed to the use of a poorer quality alfalfa meal in trial 2 than that used in trial 1.

Second generation sows produced a higher percentage of malformed pigs than first-generation sows, suggesting a greater degree of depletion of the nutrients needed to prevent such embryological abnormalities. That the cause of the abnormalities was hereditary could hardly be involved since the sows were bred to boars of other breeds.

Practical supplements such as tankage, fish meal, molasses, and dried brewer's yeast, when added late in the gestation period (ten days before parturition), failed

to increase materially the livability or weaning weights of the pigs. When added together to the ration, some effect was observed upon the livability and weaning weights but abnormalities of the pigs at birth were not prevented. Soybean lecithin, which contains both inositol and cholines, seemed to increase the livability but had no effect upon the weaning weights or occurrence of deformities in the pigs.

While the addition of 10 per cent alfalfa meal to the basal ration in both trials did not completely supplement the ration so that normal reproduction and lactation resulted, it is felt that the factor or factors responsible for these normal processes are present in alfalfa meal of good quality. Alfalfa meal varies greatly, however, in its content of this factor or factors.

#### SUMMARY

Congenital malformations such as syndactylism, talipes, and paralysis agitans of nutritional origin were produced in swine. The basal ration used in these experiments

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was found to be deficient in a factor or factors necessary to support normal reproduction and lactation in the sow.

Reproduction of the sow when fed the basal ration was defective as shown by the embryological abnormalities, and lactation was extremely poor, as is indicated by the number, appearance, and weight of the pigs when weaned. Supplementing the milk diet of the suckling pigs from sows fed the basal ration with pyridoxine, choline chloride, solubilized liver extract, 1-20 liver concentrate powder, calcium pantothenate, riboflavin, wheat germ oil, alpha tocopherol, shark liver oil, nicotinic acid, thiamin, and ascorbic acid either singly or in various combinations (at the levels used) failed to improve the appearance of the pigs or accelerate growth.

Good quality alfalfa meal, when added to the basal ration, carries a factor or factors which wholly or in part corrects the deficiencies of the basal ration. Alfalfa meal varies greatly, however, in the potency of this factor or factors.

#### References

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<sup>1</sup>Evvard, John M.: The Corn Problem in Swine Feeding. Proc. Amer. Soc. Anim. Prod., (1913): 7. <sup>2</sup>Snyder, W. P.: Wintering Mature Brood Sows. Nebraska Exper. Sta. Bull. 162, 1917.

<sup>3</sup>Hart, E. B., and Steenbock, H.: Maintenance and Reproduction with Grains and Grain Products as the Sole Dietary. J. Biol. Chem., 39, (1919): 209.

<sup>4</sup>Grimes, M. F.: Swine Production. Pennsylvania Exper. Sta. Bull. 168, 1921.

<sup>6</sup>Martin, Edgar: Legume Hay for Brood Sows. Arkansas Exper. Sta. Bull. 221, (1927): 45.

"Morrison, F. B., Fargo, J. M., and Bohstedt, G.: Feed and Care of the Brood Sow and Litter. Wisconsin Exper. Sta. Bull. 400, 1928.

Martin, Edgar: Legume Hays for Brood Sows During Gestation and Lactation. Proc. Amer. Soc. Anim. Prod., (1929): 130.

'Aubel, C. E., Hughes, J. S., and Lienhardt, H. F.: The Influence of Vitamins B and E on Reproduction in Swine. Proc. Amer. Soc. Anim. Prod., (1929):

<sup>9</sup>Gardner, V. R.: Alfalfa Versus Tankage for Breeding Gilts. Michigan Agric, Exper. Sta. Report Two Years Ending June 30, (1932): 12.

<sup>10</sup>Fishwick, V. C.: Rearing Suckling Pigs. J. Ministry Agric., 38, (1932): 898.

"Hogan, A. G.: Swine Reproduction in Relation to Nutrition. Missouri Exper. Sta. Res. Bull. 168, 1932.

<sup>12</sup>Hogan, A. G., and Johnson, S. R.: Best Rations for Brood Sows. Missouri Exper. Sta. Bull. 340, (1933): 7.

BHogan, A. G., and Johnson, S. R.: Good Pas-

Neighborliness is not only the expression of friendliness and coöperation,—it is the essence of democracy. Attend your local veterinary and civic meetings.

tures Improve the Pig Crop. Missouri Exper. Sta. Cir. 187, 1935.

<sup>11</sup>Hogan, A. G., Johnson, S. R., and Gahley, E. G.: Ration of Sow and Response of Suckling Pigs. Proc. Amer. Soc. Anim. Prod., (1938): 112.

<sup>16</sup>Hogan, A. G., and Johnson, S. R.: Inadequacy of the Concentrates Commonly Used in Swine Feeding. Missouri Exper. Sta. Res. Bull. 321, 1940.

<sup>16</sup>Hogan, A. G., and McRoberts, V. F.: Vitamin Deficiencies in a Ration for Brood Sows. Proc. Amer. Soc. Anim. Prod., (1940): 139.

Butter made during late spring and early summer months stores large quantities of vitamin A and carotene for winter use, says a news release from the National Dairy Council.

One million units of vitamin D daily, fed in the form of irradiated yeast for four weeks before, and one week after, calving did not offer assurance that milk fever would not occur, says W. E. Krauss, of the Ohio Agricultural Experiment Station.

Dr. E. B. Fred, when being installed as president of the University of Wisconsin, listed three steps in the purpose of that university: (1) to accumulate knowledge; (2) to disseminate knowledge in order that more people may more perfectly adapt themselves to their environment; (3) to prepare young people in the art of discovering, using, and disseminating knowledge.



-U. S. Army Signal Corps

Nothing like fresh milk especially when Bossie is so patient about serving. Two Yanks in Germany experiment on this dairy cow.

# EDITORIAL

#### Our Science and American Science in General

Faced with enemy countries where, for years, the development of science has been a veritable obsession, the American people, for the first time, are calling for the nation's scientific might. In the industries and professions, on the farms, the battlefields, and the seven seas, science is making a glorious record, thanks to a more general realization that behind the needful inventions is the science that made them possible. Dr. Arthur H. Compton, in an article entitled "Science and Our Nation's Future" (Science, March 2, 1945), stresses that Europe was refining her sciences while we were making farm machinery and building railroads, and that we learned, only during the last war, how far behind our enemies and allies we were in devising new weapons, despite our industrial strength. Moreover, our wealthy foundations had not yet established fellowships to encourage scientific study and research. It was the observations of our soldiers in Europe, during World War I, which turned our attention to the science that was showing itself to be of such value. From that time on, American science was to win high respect all over the world and to be ready to serve the nation when World War II broke out a quarter of a century later. However, through their science, Germany and Japan had a head-start in the production of war machinery.

Outstanding in our field is the science that made possible the mastery of the farmanimal diseases that once hindered the productivity of our livestock industry, now requisitioned en masse for supplies essential to the successful prosecution of a war that threatened total extermination of our national life. Veterinary science, a priori, is a strong example to evoke in support of Dr. Compton's contention, for, while the country—Germany—that tried to devour us always stood whole-heartedly behind its veterinary service, our country procrastinated 150 years before acknowledging that veterinary education was a public trust. Sorry, if this seems like self-castigation. The American people were busy carving a

nation out of the wilderness, totally oblivious of veterinary science, stupid as that now seems, even during our topsy-turvy agricultural development. In the 1920's, while Germans were shedding crocodile tears over their poverty, they had finer equipment (certainly in their factories) than our university and government laboratories. Futhermore, if World War I marks the birth of American science as the author, Dr. Compton, reasons, it is at least academic to know how true that is of veterinary science, since the last war was the starting point of our present educational system, of the Veterinary Corps, of audacious campaigns of animal-disease eradication, of the upsurge of organized veterinary medicine, of the beginning of scientific commercial laboratories, and of the expansion of periodical veterinary literature. In short, the truth about the backwardness of American science before the last war, and the advance made since then, does not lack confirmation in our field. But the important task now is to make World War II the starting point of another new era.

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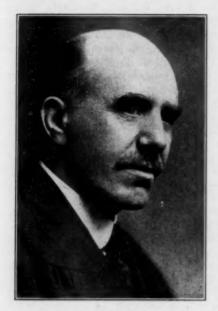
#### The Seventh War Loan

The Journal gladly devotes its front cover this month to "The Mighty 7th" War Loan Drive. In further cooperation with the Treasury Department, an application for United States Savings Bonds, imprinted American Veterinary Medical Association, has been inserted in every copy of this issue mailed to members and subscribers.

If you have not already made your purchase of 7th War Loan Bonds, or if you expect to purchase additional ones, we urge that you use the application enclosed. By so doing, you will help to bring further recognition and credit to your profession in its patriotic support of the most important phase of the war—final victory.

# Principal C. D. McGilvray Retires

The retirement this month of C. D. Mc-Gilvray, V.S., M.D.V., B.V.Sc., D.V.M., principal of the Ontario Veterinary College since 1918, is not just another news item. It recalls an outstanding event of world veterinary history—the march of formal veterinary education to the Western Hemis-



Dr. C. D. McGilvray

phere eighty-two years ago. To have served for twenty-seven years as principal of the historic faculty founded by Andrew Smith in 1862, and to have been one of the three occupants of that position during so long a stretch of time (1862-1945), is worthy of a citation for distinguished service. succession was Andrew (1862-1908), A. A. E. Grange (1908-1918), and C. D. McGilvray (1918-1945), all natives of Scotland. The accession of Andrew MacNabb does not break the blood lines, for he, though a native Canadian, is of Scotch descent.

Though born at Glasgow (Oct. 25, 1872) and educated in the public schools of that famous center of early veterinary education, C. D. McGilvray's biography really starts in the Canadian Northwest when he took a job of bookkeeper in a general store

at Birtle, Manitoba, in 1886 and the next year settled on a homestead in Saskatchewan fifty miles from a railroad. More to his liking was a homestead in Manitoba, where he divided his time between farming in summer and working in the general store when winter drove him to town. Winters are cold in that part of the Northwest. Germane to the theme are the hardships of agricultural pioneering overcome in the quest of his first diploma.

He entered the Ontario Veterinary College Oct. 1, 1898, graduated March 29, 1900, decorated with the gold medal of his class, practiced for a few months at Richmond, Va., and then entered the McKillip Veterinary College, Chicago, where he was graduated in the spring of 1901, again the gold medalist of the year. His D.V.Sc. was conferred upon him by the University of Toronto in 1922 and the D.V.M., an honorary degree, by the University of Montreal in 1936. Dr. McGilvray likes to point out that among his classmates were J. A. Campbell, distinguished veterinarian of Toronto, and J. P. Foster, famed veterinary historian of Minneapolis. The selections are admirable.

In the heyday of adult life, certain predilections are incurable. Dr. McGilvray's was the passion for the big outdoors for, after due collegiate preparation, he located for practice at Binscarth, Man. Of that quirk he writes: "There was no other veterinarian between Binscarth and the North Pole." Here he farmed, ran a livery and sales stable, sold farm implements and practiced veterinary medicine.

Obviously, the past principal of Ontario was the first extension veterinarian, since, in 1903 and 1904, he conducted courses in stock judging and veterinary medicine throughout the Canadian Northwest. In 1905, he was induced by Veterinary Director General J. G. Rutherford to join the Health of Animals Branch of the Dominion and take charge of animal-disease control in Manitoba. His achievements in that rôle are unforgettable as he soon made an outstanding record in controlling glanders, bovine tuberculosis, dourine, scabies, rabies, and hog cholera in that province, and cut

patterns for others to follow. In 1907, meat inspection and quarantine were added to the duties of his office, and in 1912 he succeeded the late Dr. F. Torrance as special lecturer in veterinary science at the Manitoba Agricultural College—a sideline of his federal work. The importance of these accumulated details, coupled with his passion for practice as well as theory, is that he brought to the Ontario faculty on Sept. 1, 1918, a vast and varied experience and an over-all understanding of his country's needs in veterinary service.

As of his principalship, Dr. McGilvray will be remembered as strict but square in discipline, a proponent of good entrance and graduate standards, a teacher of character, morals, and integrity, and a strong advocate of maintaining a workable balance between theory and practice. One of his outstanding achievements was forcing by law the closing of the infamous veterinary correspondence school at London, Ont., which had flourished for many years to the dismay of the North American veterinary service.

There are numerous society affiliations and activities to be added:

1) Manitoba Veterinary Association, member (1901), president, secretary-treasurer (1901-1918), honorary member (1918).

2) American Veterinary Medical Association, member (1906), vice-president (1910-1912), member of the Committee on Education (1929-1944), and consistent attendant at annual meetings from coast to coast.

Ancient Free and Accepted Masons, member (1904).

4) Ontario Veterinary Association member (1918); honorary member (1945).

5) Tuberculosis Committee, National Research Council, member.

6) Brucellosis Committee, Ontario Research Council, member.

Civil Service Commission of Canada, examiner in veterinary science.

8) Guelph Rotary Club, member, president, treasurer for several years.9) St. Andrew's Society and Burns' Club of

Guelph, member, president.

10) Ontario Veterinary College Alumni Asso.

Ontario Veterinary College Alumni Association, member.

11) Presbyterian Church of Guelph, member; twenty-five years an elder.

The large and widespread alumni bid adieu to Dr. McGilvray with a feeling of gratitude for having carried their alma mater through a difficult period of veterinary history, and with their best wishes for his personal happiness.

### Edward Arthur Watson 1879-1945

Dr. E. A. Watson, formerly Dominion Animal Pathologist, died in Victoria, B. C., March 12, 1945, at the age of 66. In his death, Canada has lost a gifted son, veterinary research an illustrious worker, and the veterinary profession an honored member.

His career was one of adventure and accomplishment. Born in 1879 in Devon, England, the son of a dentist, he received his early education there. Coming to Canada when he was 17 years old, he homesteaded with his brother in Saskatchewan; two years later, they tried, but failed, to reach the Klondyke in the great "Gold Rush of 98." Returning to their homestead, the two brothers soon joined the army at the outbreak of the South African War.

In South Africa, young Watson received his veterinary stimulus while detailed as a laboratory assistant to the renowned Dr. (later Sir) Arnold Theiler. Returning to Canada, he entered Ontario Veterinary College and graduated in 1904. After practicing briefly in Virginia, Dr. Watson returned to Canada to become assistant pathologist at the Biological Laboratory in Ottawa, and a year later was placed in charge of the branch laboratory at Lethbridge, Alberta. Here he began studies on dourine, a disease which was to absorb his attention for several years, and he was the first to demonstrate its causative agent in America.

Again volunteering in 1915 for service in World War I, he was sent overseas as a veterinary officer and was called to take charge of a veterinary bacteriological laboratory which the British set up in France. Returning to Canada in 1919, he was soon appointed chief of the Pathological Division, where he carried on until he retired on account of poor health in 1942.

The contributions of Dr. Watson to veterinary literature were many and varied. Aside from his early studies on dourine, he will be best remembered, perhaps, for his researches on bovine tuberculosis, par-

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ticularly his critical investigations on "B.C.G." vaccination, distemper studies in foxes, mink and ferrets, swamp fever, and ulcerative lymphangitis.

Among his colleagues, he was noted for his devotion, persistence, and energetic application in following out any subject under study. For years, he worked vigorously for the establishment of the Animal Diseases Research Institute, which will remain a monument to his agitation for better veterinary research facilities in Canada. When the Institute was finished, however, he

found that a Frankenstein had been created in that he found himself chained to the administration of a large institute, while his heart was really in the laboratory and the work which he himself could do there.

Dr. Watson's place in veterinary history as a capable investigator is assured; he had a highly critical mind and he developed this faculty by closely following the best in the world's literature. When the AVMA Research Council was established, he was selected as member-at-large, an appointment which he still held at the time of his death.







U. S. Army
Veterinary
Officers
at Work.



Fig. I—Capt. Frank Cowley, V.C., Pueblo, Colo., veterinarian at the Army War Dog Training Center in Hawaii, placing a splint on a war dog casualty, Corp. David L. Chapman assisting. The War Dog Center in Hawaii was one of the first to go into operation following the outbreak of the war.

Fig. 2—Major John G. Cranfield, V.C., 718 El Camino Real, San Carlos, Calif., vaccinating a Signal Corps pigeon for pigeon pox. T/5 Andrew J. Hollman holds the bird. All Army pigeons in POA are vaccinated for pox.

Fig. 3—Capt. Edward H. von Glan, V.C., Spokane, Wash., and S/Sgt. Wray Stone inspecting Christmas turkies in Hawaii.

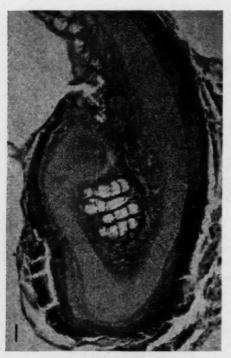
Fig. 4—Lieut. Col. Joseph D. Menges, V.C., Concordia, Kan., and Major Jack O. Whitehead, V.C., El Paso, Texas, inspecting canned foods at a distributing point in New Caledonia.

# CURRENT LITERATURE

#### ABSTRACTS

#### Microscopy in the Diagnosis of Vitamin Deficiencies

Customarily, grossly recognized lesions of the respiratory mucosa have been depended upon exclusively for the diagnosis of vitamin A deficiency in fowl, post mortem. The author, however, shows that in avitaminosis, there is a



-Poultry Science

Fig. 1—Middle turbinate of 4-day-old Rhode Island Red chicken affected with staphylococci navel ill. Entire surface except upper left aspect covered with metaplastic squamous epithelium. About 3+A-hypovitaminosis due to parent feed deficiency. x80.

microscopic keratinization of the nasal mucosa that is characteristic of that deficiency. The metaplasia shown is the replacement of the glandular (secretory) epithelium by the squamous type, particularly along the mucocutaneous junction. Being diagnostic, it is certainly important to determine at what level of the deficiency the histopathological picture begins

to develop along with infectious diseases. In pursuit of the study, beaks were collected from 357 birds (chicks, turkeys, pheasants), of which 354 were from chicks 6 to 16 weeks old, representing seven breeds. The survey which lasted twelve months, included the summer of 1943. when there was a shortage of yellow corn in the commercial feeds of that region. Instead of the gross pathology apparent only in extreme vitamin A deficiency, microscopic examinations of the nasal tissue were employed. These disclosed a gradient avitaminosis corresponding to the known relation between vitamin-A intake and the lesions known to be caused by its deficiency. The study revealed a wide range of intermediate degrees between slight and extreme privations, which ought to be of considerable value in appreciating other vitamin deficiencies. The absence of gross pathological lesions is, therefore, no reason for excluding an avitamino-Notwithstanding that the microscopic method is sensitive, the findings in the case of these vitamin-A deficient birds were unequivocally characteristic.

The study was well organized and the report is well tabulated. The poultry pathologist will read the details. The object here is to report the principle involved.—[Edwin Jungherr, Poultry Pathologist, (then) Storrs Agricultural Experiment Station: A-hypovitaminosis in Commercial Poultry Flocks on the Basis of Nasal Histopathology. Poultry Sci., 24, (March, 1945): 112-119.]

#### The Conquest of Virus Diseases

Viruses were discovered in 1892, when Iwanowski showed that the causative agent of tobacco mosaic disease could not be filtered out of laboratory specimens containing it, and when, six years later, Beijerinck proved that this pathogenic agent was not like the known living microorganisms. In 1898, Loeffler and Frosch demonstrated that foot-and-mouth disease was caused by a filtrable virus. In 1901, Walter Reed discovered the first human virus disease-yellow fever. Since these early discoveries, viruses have been incriminated as the cause of more than 200 diseases of man, animals, and plants, among them smallpox, measles, hog cholera, canine distemper, influenza, equine encephalomyelitis, poliomyelitis,

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St. Louis encephaitis, rabies, fowl pox, fowl paralysis (leucemia), blight of plants, etc., etc.

In size, viruses range from about 10  $m_{\mu}$  to 300 mµ, or between the size of certain protein molecules and certain figured microbes, in a quite continuous spectrum. Viruses may mutate to form new types (strains) but do not grow in other than living mediums. In fact, the isolation of tobacco mosaic and other viruses in crystalline form since 1935 has produced some doubt as to their living nature. present concept is that viruses are a bridge between living and nonliving matter-a bridge between the chemist's molecule and the bacteriologist's microörganism. More cannot be said in this respect at this time, except that viruses provide us with a reason for considering that life owes its existence to a specific state of matter, possessed in varying degrees.

The fact that sulfa drugs and the antibiotics are practically useless in the treatment of virus diseases can also be interpreted as an indication that viruses and bacteria are fundamentally different in their action. Scientific chemotherapy of virus diseases is, therefore, in abeyance, while vaccination, which began 3,000 years ago, transcends. Artificial variolation of the ancients was improved by Jenner in 1798 by modifying the virus in an unnatural host Tremendous losses are prevented in virus diseases of swine, poultry, dogs, sheep, and horses, because of the development of effective vaccines. Vaccines are not used in virus diseases of plants. Such diseases are controlled by destroying virus disease plants and developing varieties resistant to virus diseases. Heat treatment has effected cures in certain plant virus diseases, and quarantine measures have proved useful in the control of both plant and animal virus diseases. There are prospects that prevention by means of inactivated virus vaccines in such diseases as equine encephalomyelitis, and dog distemper, will greatly increase in the future. The 20 or more viruses now grown on chicken embryos are destined to alter the picture by providing sufficient amounts of virus to produce vaccines. Several active and inactive viruses are thus produced. The concentration of viruses for use in preparing vaccines containing inactive virus (vaccine), promises a new era in the conquest of virus diseases, including influenza. Sponsoring research by pharmaceutical manufacturers is urged. Public interest in these invisible agents should be encouraged.-[Dr. W. M. Stanley, Rockefeller Institute for Medical Research, Princeton, N. J.: Progress in the Conquest of Virus Diseases. Science, 101, (Feb. 23, 1945): 185-188.]

Rust-resistant varieties of wheat have increased farm income in two Canadian provinces by more than 27 million dollars.

#### **BOOKS AND REPORTS**

#### Yellow Magic, the Story of Penicillin

This book tells the story of the accidental discovery of penicillin, and of the painstaking work which preceded the gigantic commercial expansion of its production for general use.

Dr. Alexander Fleming was painstaking and observant to the point where he saw something more than just a contaminating mold growth on one of his culture plates. His original report was published in 1929, but an additional ten years were spent in trying to develop a procedure which would permit the production of sufficient quantities to allow its use on a human patient. In June, 1941, the problem was brought to the United States and placed before the staff of the Northern Regional Research Laboratory of the U. S. Department of Agriculture at Peoria, Ill.

There was the problem of finding the strain that produced penicillin most abundantly, and then of finding the culture medium on which it would grow most rapidly. Soon it was ready for the commercial laboratories to take over on a production basis. By June, 1943, there was a mere trickle of 425 million units available for military use, but in six months there had been a 20-fold increase, and in a year (June, 1944) there had been a 250-fold increase.

The author has presented a highly technical subject in such a way that it is readily comprehended. This book deserves a place on the shelf of every veterinarian because of its lucid explanations, and because it lays a solid foundation for the understanding of the action of penicillin and other antibiotics. Such understanding is essential to the intelligent administration of these products, which are now available for veterinary use.—[The Story of Penicillin, Yellow Magic. By J. D. Ratcliff, editor of Science Year Book and author of Lives and Dollars and Modern Miracle Men. 173 pages. Cloth. Inserted Illustrations. Random House, New York. 1945. Price, \$2.00.]

#### The Male Hormone

It's a de Kruif—style, wisecracks, innuendo, smart words, big issue an' everything. Remember how "Microbe Hunters," "Hunger Fighters," and several others took us by storm a little while back. Although "The Male Hormone" was written with man's longevity uppermost in mind, you'll be surprised how well it dovetails into the love life of the herd bull, a not entirely useless creature to the mammal addressed, considering the source of the milk we drink, the meat we eat, and the shoes we wear. More specifically speaking, this book is a veritable anthology, crammed with far-reaching

truths, on the might of the human gonads—third person, masculine gender, singular number—whose counterpart in animals is not exactly a stranger in veterinary medicine. As this reviewer translates the theme, if the gonads do such a good job repopulating the earth, why can't the male hormone prolong the span of life? Could be.

In telling the story of what's what in estrogens, the author sets up a quarrel between two factions: the pessimistic pathologist of the old school and the optimistic biochemist of this hour, between the die-hard believer in the inevitability of three-score-and-ten and the protagonist of the more cheerful drama that human life can be made more lasting-perhaps ever-lasting as the laboratory, working with certain living cells, has been demonstrating. What a theme! To make things clear, the author comes down from the stratosphere by personifying both sides of the conflict with well-known figures of medical science. On the one side are the bigwigs who sneered at Pasteur and Lister and Banting and many others who dared to invade their sacred precincts and upset the applecart. On the other side are the Jacques Loeb's, physico-chemists, who, not without giving logical reasons, denounced pathology as charlatan, and such men as the intrepid Herman Bundesen, longtime health commissioner of Chicago, the author's hero and inspiration, whose faith in medical science is less retroactive. Putting it another way, Dr. de Kruif's new book challenges the erroneous idea that longevity is a Scriptural fixture that cannot be changed by human hands-a challenge now solidly grounded upon the mounting understanding of biochemistry. Geriatrics is still a sissy study of the medical curriculum, just as pediatrics was a short time back.

This is a book to read, not to review casually. It should have been named "Hormone Hunters" for the biochemists who are paving the way to higher places for medicine. In view of crowing capons and lactating virgins (heifers), anything can happen in that field from now on. Certainly, 120 years is not an unreasonable expectation for human life, once the pathologists agree that aging is not entirely beyond human control. Except for the element of sexual gratification, there is no part of this subject that is not extremely important in veterinary medicine.—[Paul de Kruif: The Male Hormone. Cloth. 243 pages. Harcourt, Brace, and Company, New York. 1945. Price, \$2.50.]

#### The Anti-Cruelty Society of Chicago, Report

The report of The Anti-Cruelty Society of Chicago for 1945 is an account of continued activity in the humane field, under the managing director, Dr. W. A. Young, who is also secretary of the Chicago Veterinary Medical

Association. The society, which is 45 years old this year, serves the Chicago metropolitan center from its pretentious headquarters, hospital, shelter, and clinic at 157 West Grand Avenue. The year is noted for the Society's work for the revision of municipal statutes pertaining to the impounding, licensing, and quarantining of dogs. The fee for redeeming dogs from the municipal shelter was reduced from \$3.00 to \$1.00, and the annual license fee from \$3.00 to \$2.00. The Arvey Ordinance regulating the release of dogs to institutions of learning was considerably stiffened in respect to the supervision of the manner of handling. A worthy ordinance prohibiting the distribution of baby fowl to persons lacking appropriate brooding facilities, was enacted, doing away with the Easter Sunday cruelty too long continued. The survey of the Society's service and its educational program, by Director Young, of the department of investigation, and the clinic report by Dr. Erich R. Maschgan, make up an excellent piece of literature.-[Yearbook, The Anti-Cruelty Society of Chicago. 18-page, illustrated booklet. 157 West Grand Ave., Chicago, Ill.]

#### The Morgan Horse

The book entitled "The Horse America Made" and reviewed in the Journal of February, 1945 (page 120), pertains to the graceful American Saddle Horse whose early beginnings antedate the Morgan for at least a century, according to popular knowledge of the two breeds which fascinated the gentlemen of New England in colonial days. The first horse to be crowned "Morgan" was the dual-purpose stallion named "Figure," born at West Hartford, Conn., in 1789, and later named "Justin Morgan" for his former owner (1747-1798), who was never thereafter denied the credit of founding the great breed. Just a century after Mr. Morgan's death, The Morgan Horse Club erected a monument to his memory on the United States Morgan Farm near Middlebury, Vt., which was founded to perpetuate the breed, not without notable success. To be remembered about the Morgan horse is that he is a versatile, sturdy horse of outstanding stamina and endurance and has widely impregnated these qualities into other breeds, while remaining in the background through the development of the more specialized breeds: riding, harness, and draft horses. The fate of the Morgan is not predictable in the face of mounting mechanization. As the Morgan can be bred for saddle, harness, and work, it may be a "breed of the future," fitting itself usefully between the fancy of light and heavy horses and doing a good job in both estates.—[The Morgan Horse, Pride and Product of America. 16 page illustrated booklet. The Morgan Horse Club, Inc., 90 Broad Street, New York, 1937.]

# THE NEWS

#### Board of Governors Sets Dates for 1945 Business Sessions

Drs. W. A. Hagan, James Farquharson, and B. T. Simms were in Chicago on April 20-21, 1945, to transact association business. Among other matters, the dates of August 20-22, 1945, were set for the business sessions of the Executive Board and House of Representatives, which will be held in Chicago in lieu of the regular annual meeting. The following tentative schedule of meetings was adopted:

SUNDAY, AUGUST 19

p.m.-Board of Governors.

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MONDAY, AUGUST 20

a.m.-Board of Governors.

p.m.-Executive Board, first session.

TUESDAY, AUGUST 21

a.m.-Executive Board, second session.

p.m.-House of Representatives, first session.

WEDNESDAY, AUGUST 22

a.m.—House of Representatives, second session.

p.m.—Final session, House of Representatives (if necessary). Final session, Executive Board.

Meetings will be held at the Palmer House. A more detailed program of the business sessions will appear in the July and August issues of the Journal.

# Executive Board Elections in Districts V and VII

Nominating ballots, which were mailed to members in districts V and VII on March 5, 1945, were counted by Drs. W. A. Young and E. R. Maschgan, of Chicago, at the central office on May 8. They certified the following nominees whose names appeared on election ballots mailed out on May 21, 1945.

DISTRICT V (Iowa and Minnesota)

Dr. R. Fenstermacher, Associate Animal Pathologist, University of Minnesota, St. Paul.

Dr. C. C. Franks, Chief, Division of Animal Industry, Des Moines, Iowa.

Dr. H. C. H. Kernkamp, Professor of Veterinary Medicine, University of Minnesota, St. Paul.

Dr. Donald B. Palmer, Practitioner, Wayzata,

Dr. F. M. Wilson, Practitioner, Mechanicsville, Iowa.

DISTRICT VII (Alaska, Hawaii, Idaho, Montana, Nebraska, North Dakota, Oregon, Washington, Philippines, South Dakota, and Wyoming.)

A tie for fifth place in this district necessitated listing six names on the ballot.

Dr. T. O. Brandenburg, State Veterinarian, Bismarck, N. Dak.

Dr. W. J. Butler, State Veterinarian, Helena, Mont.

Dr. H. E. Kingman, Sr., Practitioner, Wyoming Hereford Ranch, Cheyenne, Wyo.

Dr. C. H. Seagraves, Practitioner, Oregon City, Ore.

Dr. R. E. Shigley, Practitioner, Minot, S. Dak.

Dr. E. E. Wegner, Dean, Division of Veterinary Medicine, State College of Washington, Pullman.

The election polls will close on July 21, 1945, and the successful candidates will take office at the conclusion of the 1945 business session of the AVMA in Chicago next August.

These elections are for full five-year terms, ending in 1950.

#### Veterinarians Meet with Feed Manufacturers

The Nutrition Committee of the American Feed Manufacturers Association met in Chicago May 3-5, and invited a number of veterinarians to attend the sessions as guests. Dr. C. C. Hastings, Williamsville, Ill., chairman of the Nutrition Committee; Dr. Carl F. Schlotthauer, Rochester, Minn., chairman of the Public Relations Committee; Dr. J. G. Hardenbergh, executive secretary, and Dr. R. C. Klussendorf, assistant executive secretary, represented the AVMA. Dr. H. Preston Hoskins represented the North American Veterinarian. At a dinner session on May 3, Dr. Richard J. Block, New York City, discussed "Amino Acids"; at another dinner session on May 4, Dr. Conrad Elvehjem, Madison, Wis., discussed "The Vitamin B Com-

The meeting was well organized and the program covered a wide variety of topics, including educational and public-relations programs, fortification of feeds, nutritional standards, and official requirements.

## Proposed Amendments of Administrative By-Laws

The following proposed amendments are again published in accordance with Article XIII of the Administrative By-Laws. (See also the May, 1945, JOURNAL, pp. 309, 310 and 317.)

PROPOSAL No. 1

Amend Article XII, Section 1, "2. Committee on Education" so that it will read as follows:

#### 2. Council on Education

1) Personnel.-The Council shall consist of nine members. Three of these shall constitute an executive committee of the Council and these members shall be elected by the Executive Board of the Association for a term of six years. The initial election shall be for two, four and six years, respectively, so that one member will retire and a successor will be elected every other year. Two members of the executive committee shall be members of the faculty of veterinary colleges accredited by the Association, one whose principal interest and training is in the basic or preclinical sciences, and the other whose interest and training is in the applied or clinical sciences. The third member shall be an active (general) practitioner of veterinary medicine.

The six remaining members of the Council shall be appointed by the President at the rate of one member per year, each to serve for a term of six years. Initially, the six members shall be appointed for terms of one, two, three, four, five, and six years, respectively, so as to provide thereafter for one annual retirement. One member shall be appointed from each of the following branches of veterinary science:

- a) Large animal practice.
- b) Small animal practice.
- c) Governmental service.
- d) Military service.
- e) Public health service (including meat and milk inspection).
- f) Veterinary education or research.

The Council shall annually elect its own chairman and secretary.

2) Duties.—All veterinary colleges accredited by the Association shall be inspected at least triennially by the executive committee of the Council and a written report of each inspection shall be presented to the Council for its consideration. This report shall deal-with all matters which have a bearing on the efficiency of the institution, i.e., size and competence of the faculty, physical plant and equipment, financial support, teaching methods in both clinical and preclinical sciences, size of student body in

relation to that of the teaching staff and the amount of clinical material available, and the facilities for post-graduate training of veterinarians. Following approval of the inspection reports by the Council as a whole, copies shall be sent to the deans of the colleges concerned. The Council shall lend its assistance to college authorities in the realization of their objectives for progressive, higher educational standards.

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The Council shall meet annually to consider reports of its executive committee, and for the consideration of any other matters which pertain to veterinary education. In its annual report to the Association it shall include a list of veterinary schools that are approved by it, and a list of those that have been inspected and found to be unsatisfactory. The Council shall draw up and publish a statement of minimum requirements for an approved veterinary school to provide a guide to institutions that are seeking approval. Upon request of such institutions, the Council may cause an inspection of the schools to be made by its executive committee. Reëxaminations of such schools shall be made only when the Council has been convinced that deficiencies have been sufficiently corrected to warrant reasonable hope that the minimum requirements for approval have been attained.

#### PROPOSAL No. 2

Amend the first two sentences of the second paragraph of Section 2, Article VI of the Administrative By-Laws so they will read as follows:

The treasurer shall pay all of the legitimate expenses of the Association, including drafts to reimburse the revolving fund issued by the executive secretary or, in his absence, by the assistant executive secretary, and signed by the president. He shall issue checks against the treasury only on the signed approval of the president and executive secretary or, in the latter's absence, by the assistant executive secretary, who shall furnish serially numbered vouchers containing full details of the nature of the expenditures.

Fat Salvage Program.—Increased effort in the salvage of fats by homes, hotels, restaurants, and army camps is required in 1945. The goal set for kitchen fats for this year is 250,000,000 lb., which is 80,000,000 lb. more than were salvaged during last year. Fats are needed for medicines, munitions, vaccines, soaps, and nylon.

#### Summary of the Suit Against Associated Serum Producers

#### Closing Argument on Behalf of Defendants

(Continued from the May JOURNAL)

#### By Mr. Tunison

Mg. Tunison—May it please the Court, ladies and gentlemen of the jury:

A long time ago, several thousand years ago, a great man said, "Cast not your pearls before swine."

Now, there is a lot about swine in this case; there is a product [hog-cholera virus] here which, as the evidence has shown you, is a pearl. evidence has shown you, undisputed, through Dr. Hagan and Dr. Koen, that this is the most powerful, virulent agent known to medical science. Hagan told you, and the evidence is undisputed, that there is no vaccine, no biological product used in the medical profession that approaches that pow-

erful agent in potency and virulence.

The evidence has shown you that the Government of the United States, not the Department of Justice, but a coordinated branch of the Government of the United States, has thrown every possible precaution around the production of that virulent, poisonous substance. Before any of these defendants can enter into the manufacture of that product, his plant, as John Swaim explained to you in telling about his new plant at Okmulgee, Oklahoma, has to be constructed according to government specifications, with every regard for sanitation, cleanliness, purity, and then every process of manufacture inside of that plant is inspected with scrupulous care. By whom? By government veteri-After it has been produced and tested, it must be kept in locked compartments under serial numbers. Under the inspection of whom? Government veterinarians.

Then comes a peculiar anomaly in the laws of a great nation upon which the prosecution here relies entirely: that when that product, manufactured with all that scrupulous care, passes out the door of that plant, all restraint is off, and that virulent poison is turned loose on the animal population and the human population of this country without any

more restriction.

Now, we admit that is the law, but we submit that it is an anomalous situation, and so, what do we have here before you ladies and gentlemen? We have a group of men who say, "Now, we can't change that law. We have helped make the preschange that law. We have a respect to the pour I would, to a man who could truthfully say, "All of which I saw and part of which I was." We showed you Dr. Baughman, who was right over there in Iowa when this substance was being developed fifty three years ago. We showed you Dr. Koen, who was on the first staff assigned by the Department of Agriculture of the United States Government to try this substance out and see how it should be used. Dr. Baughman told you how he and his good friend and neighbor, and one of the great men of his day and time, Senator Kenyon of Iowa, got that Serum-Virus-Toxin Act passed to insure the potency and purity of these products. Yet, we find, when they leave the door of the producer, all restraints are off and they are turned loose on the

Now, we cannot complain of the law permitting verybody handling that product who wants to handle it, but should that prevent us, should that prevent these men of scientific attainments, from saying each for himself, "As far as we are con-cerned, we are going to comply with all these requirements; we are going to make the best serum and virus that we can, but we are not going to be satisfied, when those products leave that door, to

turn them loose on the animal population of this country. We are going to follow them up and see that our products go only into the hands of men who are qualified by training, by experience, by scientific knowledge to know when to use them, where to use them, and when not to use them, and how to handle them, so as to prevent the spread of disease." spread of disease."

That is our situation here.

We all agree, as Mr. Borders so ably told you, that a careful farmer, with a little experience and training, can perhaps perform the manual physical task of using that big syringe on a pig, but even at that I imagine there is some difference of opinion among you ladies and gentlemen on that.

Now, the evidence shows you here that, of all

the animals known, the pig in his anatomy most

closely approaches that of man.

Now, maybe you have children in your family who have been vaccinated, or you have been vac-cinated yourself. I suppose any of you folks could take that instrument and stretch out your 60-pound boy or your 50-pound girl on a table or something, and have somebody hold her arms, and somebody hold her legs, and you could probably take that syringe and use it in some way or another, but how many of you would like to try to do it? Is that a common experience of mankind? No. You could do it, but just as Dr. Burriss said he did with his own children, when they needed to be vaccinated he called a doctor.

Now, you have all seen this picture here. We took you back to 1906, 1910, 1913 when this substance was being developed, and you also saw from the testimony of these scientists something of the development of the science of veterinary medicine.

In the early days of this country, of course, people were pretty busy getting the country subjugated. There were lots of things that were slow in developing. Take the subject of timber control, for example. It used to be thought that anybody could go out and cut those vast forests, and no thought was ever given to the conservation of the national resources. Time has changed that. Now we attempt to preserve them.

In this situation, the development of veterinary medicine has been slow. The development of hu-man medicine in this country went through about the same stages. Finally, the public begins to appreciate the necessity for control and regulation of the scientific subjects, and laws are passed.

We had the same thing, for instance, in the legal profession. In many states, anybody could practice law, but as time went on laws were enacted strictly regulating the practice of law. But they did just the same as they did with the veterinarians in this case. They said, "Now, we are going to pass a law here and require strict requirements and state bar examinations, but anybody who has been practicing law five years, we are not going to take his right to make a living away from him. So we will grant on the face of the papers a certificate to all those fellows because they are getting old and they will be dying off sooner or later, and the new crop will all come in properly trained."

Now, that is just what was done in this veterinary situation. Some of you folks may remember that we used to call the old horse doctor, when they used to talk about "hollow-horn" and "wolfin-the-tail," and various things of that kind. But public knowledge and the legislatures of various states caught up with that situation and established these great veterinary schools, which these deans have told you about in a general way here, to pro-

tect the food supply of the state and of the nation. They recognized that the practice of this combined art and science had to be regulated, and they set up these scientific schools, and they provided for state board examinations, all with the idea of con-serving the food supply of the nation and controll-

ing animal diseases in the nation.

So you have this class of scientific men, and you saw examples of them on the stand here, Dean Hagan, Dean Bergman, and Dean Dykstra. A very good observer of the character of men remarked to me after they had testified: "With those three men, all you need to do is put them up on the stand and say, "These three men are on our side'." Anybody can tell the kind of men they are. Now, you saw them and you heard them and we didn't ask them to go into controversial questions here as to whether a farmer should do this vaccination or a veterinarian should do it. We simply called them to come here and give you the scientific facts and let you folks draw your own conclusions as to whether men, trained in the science outlined by those men, having taken the courses outlined by those men, dealing with the dangerous substances told you by those men, dealing with the complex diseases referred to by those men, whether those men are better qualified to administer this dangerous substance than the layman.

In passing on that, I want to refer to that par-ticular question that counsel asked Dean Hagan just before he left the stand, "If you had a choice between a good farmer, a careful farmer, and a careless veterinarian, which would you take?"

One of two types of gas masks for horses and mules in combat areas. This mask weighs 15 pounds and operates very much as those used for human beings. It consists of close-fitting muzzle pieces connected by flexible hose to cannisters containing chemical for purifying air.

Well, of course the dean truthfully answered. He would take the good farmer, just like any one of you mothers, if you were considering the administration of some medicine to your daughter, would you rather have it done by that carefully trained mother or by a drunken physician, which sometimes happens? It is like the old trick question, "Have you stopped beating your wife?" There is no choice whether you used to beat her and have quit, or are you still beating her. It is just one of those trick questions.

As far as that is concerned, we should turn next, I think, in evaluating the strength of the argument presented to you here by counsel for the prosecution, to their opening statement. It is the common experience of mankind that people are judged by the fidelity with which they perform their engage-

Now, it was our duty in opening this case to tell you what our defense was, and it was the duty of the government to tell you what their evidence would be and what they would prove to you. Now, I want to refer briefly to the things that the prose-

cution said they would prove to you.

First, "Now, you will learn from the evidence that these members, these defendants, had meetings from time to time and discussed that policy, this policy of a restrictive agreement."

Now, I ask you, and each of you, to search your memory whether there is a speck or a scintilla of evidence in this case that this policy was ever discussed by any of these defendants at any of these meetings? Of course he had to tell you, or he did that would have been the conspiracy. That would have been the thing necessary for them to establish.

"You will learn from the evidence that these

members had meetings from time to time and dis-

cussed that policy."

Where is that evidence? I ask the prosecution. I asked the prosecution, when they closed, to point to one speck of evidence in this case that these defendants ever discussed that policy, and every one of them has gone on the stand here and denied

they ever discussed it.

Second, here is the next thing he was going to prove to you, and I am reading from his own words: "The government contends and expects to show in this case that that policy was directed to and intended to put the direct-selling houses out

of business."

Again I ask you, where is there a word of evidence in this case that that policy was intended to and directed to put the direct-selling houses out of business? Certainly from the lips of no witness for the prosecution; certainly denied by the lips of their own witnesses. You heard John Swaim on the stand. You all saw Frank Jones sitting back here. He was pointed out. You all heard the testimony that this book, this blue book, "The American Druggist," goes to every drugstore in the United States, and I don't know how many thousands of them there are. There is the big three-page spread of John Swaim's company, and there is the big sixpage spread of Frank Jones' company out in Fort Worth, and other companies in there. So, anybody in these United States can get all the serum and virus they want, and, as the evidence has so ably been outlined to you by Mr. Borders, these companies have increased their business from 5 to 1 to 6 and 7 to 1, and their increase has far outstripped the progress of the veterinary companies.

So far as the proposition that there is any evidence in this case of an agreement, or the effect of an agreement, to put the direct-selling companies out of business, the prosecution has utterly

failed to establish that.

Now, the third thing he told you that he would show was, "we will show that the reason they adopted the name American Foundation for Animal Health was so that persons who read the publicity and articles and advertisements put out would not know it was the Associated Serum Producers."

You will recall the evidence, ladies and gentlemen, and it will be sent in to you, that in the press releases which Mr. Fairall sent out there was express, definite information to the publishers as to who was back of this American Foundation of Animal Health, and in passing that, let me call your attention to the fact that that is the most common thing in the world. You have right here in Chicago your American Meat Institute, supported by the packers, which encourages the use of meat. You have all kinds of industrial programs. You have the Edison Electric Institute, I believe its name is, advertising to promote the use of electric products. It is the most common thing in the world.

Now, is it necessary every time institutional constructive advertisement of that kind goes out that there be presented at the bottom of the ad that, "This advertisement is paid for by the producers of this product in an effort to increase their business"? Is the American public so guilible and simple that they do not know that that is the first thing people do advertise for? But even if there were anything to the point raised in the suspicious mind of counsel, what of it? The question is, what kind of advertising did they put out? That was the issue. Was that advertisement in accordance with the principles expressed here by these expert, disinterested witnesses?

Think back and see what it said. It told swine raisers, "You should immunize. You should have it done by people who understand how to do it."

It told swine raisers when epidemics were likely to appear.

The little radio flashes and the short ads in the papers warned of outbreaks after outbreaks had been noticed and verified in different parts of the country. It said, "You ought to look out for this."

Was that all in the public interest or was it not? Was that an effort to increase the food supply of our country, or was it not? You can draw your own conclusion about that.

So I say any argument, whether the name of all these people appeared on each of these ads is immaterial.

We have heard so much, ladies and gentlemen, about the government in this case that that really needs a little discussion.

What is the Government of the United States? The Government of the United States is a pretty big institution and has got larger, as we know, in recent years, with more ramifications and more branches, but it has always been my understanding that the executive departments were coördinate in their nature.

Now, the Department of Justice is under the attorney-general, Mr. Francis Biddle. The Secretary of Agriculture is Mr. Wickard, from your neighboring state of Indiana down here, and I presume that Mr. Wickard is just as much a part of the government as Mr. Biddle. Mr. Wickard's department, the United States Department of Agriculture, Bureau of Animal Industry, came out as far back as 1924 with a bulletin, "Selection and Care of Serum and Virus for Hog-Cholera Prevention."

Who wrote this? Well, the man who is head of the virus and serum control division of that department, which operates under this Virus-Serum-Toxin Act, which Dr. Baughman helped establish, Dr. D. I. Skidmore. He was there in 1924 and he is there today, still in charge of that division, and he has never changed, from 1924 down to date, what he said in 1924, which was the basis for at least some of these men adopting this policy.

What did he say? "The services of a competent

veterinarian are desirable owing to the greater knowledge which such a man has of biological products, anatomy, sanitation, from a disease-control standpoint, and also because of his experience in the diagnosis and treatment of disease."

Now, doesn't that fit in, ladies and gentlemen, exactly with what our witnesses have told you on this stand? Take a man like Dr. Koen, for example. Now, Dr. Koen is in charge [of hog-cholera control] for the Department of Agriculture, an executive branch of the government, over here in the great state of Iowa, the largest hog producing state in the world. Dr. Koen is in charge of the actual field work there in that state, with a staff of veterinarians under him, in the eradication of hog cholera. Is he a practical man who knows his business? Certainly. You heard his evidence. He told you, in his closing words, almost, that hog-cholera virus should be administered only by graduate veterinarians, that it was so dangerous that even a graduate veterinarian ought to be required to account for every drop of it that came into his possession.

Now, is that the Government of the United States? I submit that is the Government of the United States, and I submit further, ladies and gentlemen, that is the Government of the United States speaking, not by suspicion, not by an indictment brought out before a grand jury which has heard only one side of the case. That is the Government of the United States speaking out of the mouths of men who have spent their lives in training and in actual experience in the handling of this plague of swine and in the handling of this deadly product used to counteract that disease.

So you can take your choice as far as the government is concerned, ladies and gentlemen. You can take your choice between the suspicion of the able counsel across the table and the positive knowledge based on scientific investigation of this other branch of the government. So I think we ought to have no more in this case about the government. The government stands on our side, ladies and gentlemen.

Now, further, in the administration of this act, in the administration and in the marketing of this product, we have other significant circumstances from the Government of the United States.

You have heard the extracts here from the "Code of Fair Competition" for the anti-hog-cholera serum and hog-cholera virus industry. That was a rather impressive document, I take it. It bears the signature of the present President of the United States who, I believe counsel will concede, is part of the government. It promulgated this code by executive order in 1934, and right there in that code, after full hearing at which all branches of the public interests were represented, consumers, swine raisers, with notice given to everybody, there was established a code authority to administer this code under the provision of the National Industrial Recovery Act. And the men who participated in that code authority are the same men who sit before you in this trial here today. The first chairman of that authority, as I remember it, was Dr. Cahill, who sits over here; Mr. Williams, Mr. Young, Dr. Norden, Dr. Bott were members; practically every one of these defendants participated in that code in adoption and in its recognition of the two classes of distribution.

Now, I do not say, I do not want to be understood as saying, that the fact they had a code authorized them to engage in an unlawful conspiracy. Far be it from such. But I do tell you this in all fairness, that this was a recognition, by another branch of the Government of the United States, of the logical division of this industry into these two groups.

Well, due to a Supreme Court decision, this NRA°

was declared unconstitutional, and what was the effect? Congress was so solicitous, Congress recognized the importance of the serum-virus industry in animal health control in these United States, and was so solicitous to foster it, that they adopted and enacted into law a marketing agreement act for this particular industry, and under that marketing agreement act Congress declared the necessity in the public interest of the maintenance of an adequate supply of anti-hog-cholera serum and virus.

Here is what Congress said: "In order to effectuate the policy of this act, the Secretary of Agriculture shall have power"—It did not say the Attorney-General should have power—"The Secretary of Agriculture shall have power, after due notice and opportunity for hearing, to enter into marketing agreements with manufacturers and others engaged in the handling of anti-hog-cholera serum and virus," and in the preliminary section of the Act it says that the maintenance of adequate supplies of these products is necessary for the maintenance of an adequate food supply.

So they had public hearings on that, and testimony was taken at that national public hearing to see what kind of a marketing agreement should be made for anti-hog-cholera serum and hog-cholera virus. After that evidence was all taken and collected and sent down to Washington, further hearings were held before the Secretary of Agriculture and, finally, that agreement was approved and the Secretary issued his order, Bureau of Animal Industry Order 361, which absolutely governs the marketing of this serum and virus in these United States.

What did they put in there,—and this is exclusive; you can't go out and market this serum and virus any place except pursuant to this order of the Secretary.

What did they put in there? "A control agency is hereby established consisting of twelve members to administer this agreement and order."

And who are they? To represent manufacturers marketing their products principally through veterinarians: E. A. Cahill; there he sits. A. E. Bott; there he sits. G. H. Williams; there he sits. G. G. Graham; where is Guy? He was here a minute ago. Carl J. Norden; there he is. Dean Corsa, unfortunately, he has left us. R. M. Young; there he sits.

Who did they put on the other side to represent manufacturers marketing their products principally through other channels? John E. Swaim, and he is the man who sat on the stand here and told you that there wasn't any restriction on his business, that he had built a big new plant down at Okmulgee, Oklahoma, and he just bought a big new office building over here by the stockyards, and he was entirely satisfied with the way his business was going, and the figures on that sheet show you.

going, and the figures on that sheet show you.

Who else? Frank H. Jones. He was sitting back here—I don't know whether he is here today or not—under subpoena from the government, in that group, and the same number on that side. So the Government of the United States again there recognized that natural, logical distribution or division of this industry into the two classes.

I think that should settle the question of what the government is, and this talk of the government asking you to do things here.

I see, ladies and gentlemen, that my time is running short, and I do not want to trespass on your time, but I just would like to say in conclusion that you have seen a little glimpse here of the broad field of the advancement of science. These things go a little slow. I will grant you that the policy of these defendants is a little in advance of the law, but that is not uncommon in the development of mankind.

A hundred years ago, at the time of the Dred Scott decision, the colored man in our midst wasn't much better than one of these hogs, as far as his

liberty and what you could do to him were concerned. I suppose a man who owned a hundred slaves could take a syringe like that, and whether he liked it or not, and inject it into him. But a man from your own state here, a country fellow down here at Springfield, raised that issue and said, "We have got to change these things. We have got to improve these things." After a long. hard struggle, that improvement came. You have seen a glimpse here of that same situation, of how these men grew up with this product—it just developed in a life time here—how they have con-scientiously striven to elevate the tone of the industry, to care for the animal health of the country; how they have cooperated with these great state institutions which are now being built up, and I know and you know that sooner or later a law will be enacted in this country, just like Dr. Koen told you about, that after this jewel, this virulent product, has left the door of the factory, it has to be perfectly taken care of, refrigerated, temperatured and accounted for when it is administered in the hands of a competent man.

Now, that is all there is to this case, ladies and gentlemen, and that is the policy of these good men. You have sat here and looked into their faces these two weeks. You know whether any of them went on that stand and lied when they told you, "We had no such agreement." I do not believe you are going to accept, I do not believe you are going to accept, I do not believe you are going to give any credence to, the suggestion of counsel that a mere suspicion should overcome the facts and the postive testimony of these men.

You all said, you recall, at your voir dire examination by Mr. Borders that you would carry that presumption of innocence of these men with you throughout the trial; that if there were any facts proven here from which two inferences could be drawn, one of innocence and one of guilt, you would draw the inference of innocence. I think you all recall that.

You will all recall further that you said that you would not convict if the facts developed here could be explained on any reasonable hypothesis except that of guilt. I submit to you that under the facts brought out here the hypothesis of guilt is inconceivable. That is the only unreasonable hypothesis in this case. Every one of the facts points to the presumption and the hypothesis of innocence.

So I hope, ladies and gentlemen, that these men have been brought in here by mistake. They have been brought in here by an indictment of a grand jury of the people of this county that heard only one side of this case. Now the case has been brought here before you ladies and gentlemen, and you have heard both sides of this case. That is the Anglo-Saxon tradition of the administration of law. The indictments are brought in by a grand jury where only the prosecution is present and only the papers that the prosecution wants them to see are exhibited to them. But the constitutional provision of our jurisprudence is that when it comes to the trial of innocence or guilt, then a different jury is here, both sides are presented, and the facts are clearly brought out and developed and you start in with the presumption that that indictment that counsel read to you does not prove a thing.

You all stated on your voir dire that the fact that these men had been indicted would not in any way prejudice you against them. So I say now, good people, that grand jury three years ago, hearing only one side, made a mistake.

I ask you, ladies and gentlemen, having heard all of this evidence, to send these good men, these good citizens back to their homes, to their children and their grandchildren, and say, "We are sorry that our neighbors a few years ago made that mistake."

I thank you.

#### Reply Argument on Behalf of Government By Mr. Haddock

Mr. HADDOCK-May it please the Court, ladies and gentlemen: You have been very patient and very attentive and I shall attempt not to take too much of your time.

In starting, Mr. Tunison made the statement that there was a very great deal of similarity between the pig and the human, and he asked you whether or not you would want to use one of these instruments on your 60-pound child.

I submit that that question is not involved here. I draw a distinction between my two children and

pigs, and I think you people will.

Further, with respect to this marketing agreement and the NRA Code, the NRA and the Department of Agriculture recognized by the exhibits that have been referred to that there were two classes, two methods of selling, that producers of serum and virus sold their products individually in different ways

I think the Court will instruct you that there has never been approved by the NRA, or by the Department of Agriculture, any combination or any agreement between individuals by which they will restrict their sales to veterinarians only.

Now, there is not, and there never has been, this case any contention by the government that veterinarians do not perform a valid and important ' service. Of course they do.

There has never been any contention here that veterinarians should not be called by a farmer for the treatment of his hogs. Why, almost common sense would dictate to almost any reasonable farmer that if his hogs show any sign of sickness that he should call in a veterinarian.

Of course, laymen are not qualified to diagnose or attend to sick hogs and we have not any con-

tention that they are.

I would like to point out, however, that the main and principal use of hog serum and virus is as a preventive, rather than as a curative of disease. That has been admitted by the defendants on the stand themselves.

This serum and virus is a prophylactic and should be administered to pigs and hogs when in a healthy state before they incur any disease at all, and as a matter of fact, most of this serum and virus is administered to hogs while they are healthy.

Now, the defendants' own witnesses have testified that they believe the farmers were capable of tell-

ing whether or not they were sick.

I think it was Dr. Baughman on the stand Wednesday who made that specific statement. He also stated that, when a veterinarian is called to vaccinate hogs, the first thing he does is to look at the hogs and see whether or not they show any signs of sickness, and he asks the farmer whether his hogs are healthy.

The testimony is almost uncontradicted here that the administration of this serum and virus, the method by which the serum and virus is injected, is a simple thing, and I will refer again to the testimony of Dr. Hagan, a very famous authority on veterinary medicine, to the effect that the administration of serum and virus helped the healthy animal. It is a thing which is not complicated or complex, and he made the statement that he would rather have a careful farmer do it than a careless veterinarian.

These instruments measure out the doses which are given to the hogs.

These bottles, on their labels, show the dosage for

different sizes of pigs.

"Now, another thing, another question was raised in the evidence, and that was post-vaccination care. When pigs are immunized, the testimony has been that they have a mild case of cholera and that

they require proper diet for a period of time thereafter, but the defendants themselves have testified that the farmer actually administers that diet, not the veterinarian. He does so under the veterinarian's instructions, and also that the farmer is perfectly capable of knowing what the proper diet is for hogs after they have been immunized.

You have heard uncontradicted testimony that thousands of farmers in Illinois have successfully vaccinated their own hogs. That has not been contradicted or contested by the defendants in this

Now, in the face of all that, you have seen here that the defendants have pooled their finances and their efforts in an advertising program under the name of the American Foundation for Animal Health, in which again and again and again the farmers have been told that vaccination should be made by veterinarians only, and the evidence which will go with you to the jury room shows the advertisements repeatedly issued over a period of years stressing that fact. Now, the purpose of this advertising program

has been said by the defendants to be to increase the general sale of hog cholera serum and virus.

I submit the evidence clearly shows the intent of this advertising program was to increase—well, it was first to attempt to dissuade, or persuade, or to scare the farmer from the vaccination of his own hogs and thus cause him to have a veteri-

narian come in to vaccinate his healthy hogs. Second, that the increased business which the veterinarian would get, and the increased sales of serum and virus through veterinarians, should be

turned over to the defendants.

You have heard about the effect upon the directselling houses, that the intent of these defendants here has never been to restrain business of the

direct-selling houses.

You heard from the stand here that each of the defendants had adopted its policy of selling direct many years prior to the alleged date of their con-

You have also seen that, during the early period in the use of hog cholera serum and virus, it was experimental and that even after the first regulation by the Department of Agriculture, even then the Department of Agriculture sent out veterinarians, Dr. Koen among them, into Iowa and other places to show the effectiveness of the use of these things.

By 1920, hog-cholera serum and virus and its use had begun to get a rather widespread accep-

tance.

You heard the testimony of Dr. Hollecker that in 1920, or about 1920, the direct-selling houses would account for approximately 15 per cent of the total sales of hog-cholera serum and virus. That, I think, was stipulated to by the defendants.

1933, the percentage of the total business being handled by direct-selling houses had jumped from 15 per cent to 30 per cent. It had doubled, and that fact was of concern to these defendants. Individually, they may have maintained an adver-Individually, they may have maintained an advertising program suggesting to the farmers that they vaccinate only by veterinarians, but in the face of that individual advertising the direct-selling houses had doubled their production.

Now, there is evidence here to the fact that the defendants were concerned about this increase in lay vaccination in the business of direct-selling

houses.

call your attention to government's exhibit MOV-16. This is an article which was printed in the Norden News in September-October, 1933, after the formation of this Association, a few months afterwards, and this Norden News was circulated among the veterinary profession.

This article announced the organization of the

Associated Serum Producers, stating:

"Twenty-three ethical serum producers are thus enabled to pool their efforts to protect and advance the interests of the veterinarian and to promote fair trade practices among the members."

I want to read the last paragraph and call your specific attention to this:

"A continuation of the program in behalf of the veterinarians which is of vital help to the profession depends upon the success of the ethical serum Veterinarians who are concerned with producers. their own personal welfare cannot do better than

support the program by purchasing their serum from one of the members of this organization. In this way only it may be possible to thwart the efforts of lay companies to break down the proper administration of serum and virus by veterinar-

Now, by 1933-by 1935, the statistics we have in evidence here show that the lay companies produced approximately 33 per cent of the total sales, total independent sales of hog-cholera serum and virus. Had they continued at the same rate of progress as had occurred between 1920 and 1933, they might have produced 50 per cent or 60 per I am referring to the lay houses.

Now, that, of course, is mere speculation.

It was about 1935 or 1936 that this advertising program, and the evidence shows that, first gained any degree of magnitude, and I call your attention to the fact that from 1935 to 1941, during the period when this advertising program was in full swing, the proportion of the business by the lay houses had stayed right at 33 per cent.

Now, there is a real and a sound distinction between the effectiveness of individual action and the effectiveness of concerted action. That is recognized by the event that Mr. Furry, when he was on the stand, stated that among his reasons for joining the Association he figured that a bunch of men who could get together amicably could get things done that you could not do alone.

The advertising program carried on by any individual defendant, as it has been testified from the stand, could not possibly have the scope or the power of an advertising program jointly agreed upon and jointly financed by these individuals.

The members even agreed among themselves, as is shown by a minute here, that they would refrain individually from advertising direct to the farmer, and that they would pool their resources, throw all of their resources into this joint advertising program, the obvious purpose of which was a concerted attempt to persuade farmers to use veterinarians only and to persuade veterinarians to deal with these members of this Association.

Now, as to whether or not the defendants agreed to the program—there have been introduced into evidence two pamphlets which were distributed by the Associated Serum Producers among the vet-erinarians, one of them, I believe, in 1937, and one of them in 1939, on the back page of which ap-

"These companies have established-"

Under that it lists the names of the companies, and you will see the names of the defendants there-Then at the bottom it makes the statement: "The above companies are committed to sell their products exclusively to veterinarians." A synonym "committed" is "pledged"

These defendants embarked upon an advertising program, contributed their money to that advertising program, the effect of which would have made it business suicide for any member who had participated in it to change his policy of distribution, so long as this program was continued.

Before these people entered this association, each one of them would have the full power and right, if he desired, to change his method of distribution. After he had participated herein and paid for this advertising program and promoted it, what was the situation? It was vastly different. He had pledged himself, along with the others of the veterinary profession, to sell to veterinarians only. If he then sought to change his program, he would be considered a Judas, and you know that very well, and if he tried to sell to lay houses he would be in the position of having to eat his own words: I mean, by selling direct to the farmers, he would practically have to eat his own words because of his statements in here that only veterinarians can properly administer serum and virus.

Conspiracies, as a general proposition, are secret and hidden things, incapable of being proved by direct or express evidence, but its proof consists generally of courses of conduct and actions of the members, from which the jury must determine that there must have been some understanding, some meeting of the minds between these defendants, to explain the courses of action which

they took in concert with each other.

Here the activities of the defendants are completely inconsistent with any theory other than the fact that they did agree among themselves to sell

to veterinarians only. Now, as to the motives of the defendants: have heard each defendant state that his intention in joining the association was to promote the gen-eral sale of serum and virus among livestock The fact remains that producers of over owners. 50 per cent, or approximately 50 per cent, of the total production of serum and virus have agreed among themselves, as shown by their actions, to restrict their sales to veterinarians only. The defendants apparently argue that since the Congress has not seen fit to pass legislation prohibiting the farmers from lay vaccination, that the defendants would have the right to get together among them-selves and remedy that defect.

Well, it is our American tradition that people have the right to choose what is good for them-selves, what they can do in the absence of action by the Congress or by our state legislatures, and that we should not have imposed upon us restrictions by any group, no matter how well motivated

that group may have been.

I believe, when you consider all of the evidence, that you will reach the conclusion that the defendants here did combine to restrict the channels of distribution through which hog-cholera serum and virus was sold, and that you will return a verdict of guilty.

Thank you.

#### Instructions to the Jury By Judge William H. Holly

THE COURT-Ladies and gentlemen, it becomes my duty now to instruct you as to the law of the case, and my sole function here in the trial of this case is to pass upon questions of law. It is your duty to determine the facts from the evidence as you have heard it as this case has proceeded.

I hope that I have given no indication of any conclusion I may have reached as to the facts. If I have, you will disregard it. You are not to be guided by my impression as to what is proved or is not proved here. If I have given you any notion of my impressions, you will put that to one side and determine the facts, determine what has been proved from the evidence that you have heard from the lips of the witnesses or from the docu-ments that have been introduced in the case.

Now, it is the law that if two or more persons combine to unreasonably restrain interstate com-merce they are guilty of a misdemeanor and you are to determine whether any two or more of these defendants have agreed or combined among themselves to unreasonably restrain interstate It is conceded by all of the parties on both merce. sides of this case that the commerce that is involved in this proceeding is interstate commerce.

Now, the indictment charges,-I think I will read you the charging part of this indictment. ceding the return of this indictment, which was

It is charged that for more than nine years pre-

returned on May 28, 1942, these defendants have "knowingly and continuously engaged in a wrongful and unlawful combination and conspiracy," and the combination was that "each defendant producer sell animal medicines and supplies only to veterinarians who are graduates of approved veterinary colleges and to producers, wholesalers, and dealers who sell only to such veterinarians, and to purchasers for resale who likewise confine their

"That each defendant producer refrain from selling animal medicines and supplies to consumers and to producers, wholesalers, and dealers who either resell such medicines and supplies to consumers or permit those to whom they resell such medicines and supplies to sell to consumers.

"That each defendant producer refrain from advertising its products direct to the farmer by the use of farm papers, the radio, by circularizing through the mail, or by other means.

"That the defendant Associated Serum Producers, Inc. require its members to sell animal medicines and supplies only to veterinarians who are graduates of approved veterinary colleges and to producers, wholesalers, and dealers who sell only to such veterinarians, and to purchasers for resale who likewise confine their sales.

That the defendant Associated Serum Producers. Inc., require its members to refrain from selling their products to consumers and to producers, wholesalers, and dealers who either resell such products to consumers or permit those to whom they resell such products to sell to consumers.

That the defendant Associated Serum Producers, Inc. require its members to refrain from advertising their products direct to the farmer by the use of farm papers, the radio, by circularizing through the mail or by other means."

And that that conspiracy continued through the three years immediately preceding this indictment; that is the only period that you are to consider whether there was such a conspiracy that con-tinued through the three years immediately preceding this indictment.

Now, in general, I think this indictment is directed to two things, to two charges: First, that these defendants combined to restrict their sales of anti-hog-cholera serum and virus so that they could reach the hands of veterinarians only.

May I say here that some mention has been made in the evidence of other products, but we are concerned now only with anti-hog-cholera serum and virus. You will disregard any evidence that you have heard with reference to other products because the prosecution is now limited to these two articles and to a charge of conspiracy or com-bination to restrict the sale of these products.

And, also, they charge that there was a combination to prevent the sale by the producers, these defendants,-to restrict their sales so that the product would reach only the veterinarian; and, further, that they agreed there was a combination to so conduct their advertising as to restrict their sales solely to veterinarians and prevent the sales through the ordinary channels of trade. Now, to maintain that charge the government

must prove, first, that there was a combination among these defendants to do these things; and, intended that they an unreasonable

restraint of trade.

Each of these defendants had a right by himself to determine to whom he would sell his prod-He could determine for himself that would sell to veterinarians only and that he would not sell to anybody who allowed his product to come into the hands of others than veterinarians; he had a perfectly lawful right to do that, each defendant had the right to do that by himself. If that was his policy and continued to be his individual policy, without agreement or combination with others to carry on such a policy, he has committed no offense.

Before you can find any of these defendants guilty of the charges in this indictment, the government must have proven not only that there was an individual policy so to do, but there was a combination or agreement among these defendants to restrict their sales collectively so that the product would reach only the hands of the veterinarians.

If the government has failed to prove that charge,—and I will instruct you later as to the quantity of proof required,—if the government has failed to prove that these defendants combined and agreed to so restrict their sales, or some two or more of them did, then your verdict must be not guilty.

Now, if you should find that the government has proved by the degree of proof that I shall mention hereafter that these defendants so restrict the sales of the anti-hog-cholera serum and virus, if you find from all the evidence in the case that this, while it would be a restraint of trade if they did so combine, that it was only a reasonable restraint of trade, then you must find the defendants not guilty.

It is unreasonable restraints of trade, of interstate trade and commerce, that are condemned by law. Agreements or combinations which restrain trade or commerce only reasonably are not condemned by law, and if there was a restraint, if you should find such a combination, but it was not an unreasonable restraint of trade, then the defendants are not guilty.

On the other hand, if the government proves by the degree of evidence that I shall mention that these defendants did combine,-that they did combine, not that they had the individual policy,-but they did combine and agree to so restrict the sale of their products, and that was an unreasonable restraint of trade, then you should find the defendants guilty.

Now, the same remarks would apply to the alleged combination as to the advertising. Each defendant here had a right to advertise his products as he might see fit. It would only be if he combined with others to unreasonably restrict his advertising, or in his advertising to unduly restrict the ordinary channels of the distribution of these products, that he can be found guilty, if any two or more of them did that. They must prove that there were two or more of them that combined to so conduct their advertising as to unreasonably restrict the ordinary channels of the distribution of their product, the anti-hog-cholera serum and

Now, it is not necessary to prove a combination, whether lawful or unlawful,—it is not necessary, in proving a combination, that the government should produce witnesses here who would testify that such a combination was entered into, that they heard the parties agree, or produce writings showing that the parties agreed; that is not necessary.

There are two kinds of evidence by which any fact may be proven: It may be proven by direct evidence, by a witness going on the stand and stating with reference to an agreement that he heard the agreement made, or by producing a writing showing that there was an agreement made, or it may be shown by circumstances.

One of the circumstances that may be shown to show that there is an unlawful combination is that the parties pursued a common policy. Now, does not necessarily prove that there is a combination, because the parties may individually desire to pursue that policy.

You are to determine from all the evidence in the case, and from all the circumstances that you have heard related here, and the documents that you have seen and that have been presented, whether the sales policy was the result of some agreement or combination, or whether each individual adopted his own sales policy regardless of the sales policy of the other defendants in the case.

While, as I say, the fact that all the persons

happened to adopt the same policy might be a circumstance from which you could infer that, yet, if you could just as reasonably infer from all the evidence in the case that their sales policy not the result of an agreement, but was the individual sales policy adopted by the respective defendants because of their feeling concerning the necessity of care in the use of this serum, if you can just as reasonably infer that as that it was the result of an agreement among them, then you

must find the defendants not guilty.

Now, these defendants come before you clothed with a presumption that they are innocent of the charge made against them in this case. The fact that they were indicted should not be taken by you as any evidence of their guilt. The indictment is simply the charge that is made. Whenever the gov-ernment feels that a matter should be inquired into, why, it is necessary that they present one side of the case to the grand jury and have the grand jury return the indictment, but it is up to you to determine whether the indictment is sustained by the evidence.

You are not to start out with a theory that because these defendants are here in court and the government is prosecuting them that they are guilty of something. You are to start out with a presumption that they are not guilty, and you are to retain that presumption in your mind until the

evidence overcomes that.

They are presumed to be innocent of this crime and that presumption remains with them until it is overcome by evidence that convinces you beyond reasonable doubt that they are guilty of the crime charged. If you have a reasonable doubt as to whether these defendants combined, or whether they carried out an individual policy, then it would be your duty to acquit them.



-Acme Photo

Captain Richard J. Gorman, assistant port veterinarian at Hampton Roads, is shown with his civilian dog "Ace" giving blood for wounded war dogs. Ace also acts as a training aide for demobilized war dogs.

If the evidence does show beyond a reasonable doubt, and does convince you beyond a reasonable doubt that they did combine and that they restrained.—that they did combine to unreasonably restrain interstate commerce in the anti-hog-cholera serum and virus, if the evidence convinces you beyond a reasonable doubt of that, then you should find them guilty; if it does not convince you beyond a reasonable doubt, you should find them not guilty.

Something has been said with reference to the result of the policy. Now, that the policy did not result in an undue restraint of trade is not, of itself, a defense if the defendants combined. The charge is that they combined to unreasonably restrain interstate trade and commerce in the products that we have mentioned, and if they did so combine the fact that they did not accomplish the result would not be a defense in the case, but you may take into consideration what happened as the result of such a combination, if you do find there was a combination.

You may take into consideration the result in determining whether there was an intent to unrea-

sonably restrain trade and commerce.

If trade and commerce was not unreasonably restrained as the result of their combination, that would not be a defense to their combination, but you may consider that fact in determining whether they had such an intent. If their combination did not produce such results, you may take that fact into consideration in considering whether they had such an intent.

You have heard something said about the attitude of other government agencies here. Now, the Congress has passed this law prohibiting combinations to unreasonably restrain interstate trade and commerce and no officer of the government can set aside that law by his act, nor excuse the breach of that law. You may, however, consider the attitude of other government officials in considering the question of whether the restraint of trade, if there was a restraint of trade, was unreasonable.

Now, it is not necessary for these defendants to prove that they are not guilty. The burden does not devolve upon them to prove to you by the evidence that they are not guilty. The burden is upon the government to prove they are guilty and to

prove it beyond a reasonable doubt.

Now, a reasonable doubt does not mean a guess or conjecture or speculation. It means a doubt that is based upon reason and that arises from the evidence. If the evidence does so convince you then you should find the defendants not guilty. On the other hand, you must feel to a moral certainty that these defendants are guilty before you should

return a verdict of guilt.

If you find from the evidence, that these gentlemen each had his individual policy and was following out his individual policy, but, having that individual policy, they came together and agreed to carry out that policy, then, of course, that would be an agreement or combination in restraint of trade. However, in determining that fact you will consider the evidence and if it is just as reasonable that they were simply carrying out their inde-pendent policy after the Serum Association was organized as that they agreed together to carry out the policy, then you would have to find the de-

fendants not guilty.

If you find that they did enter into an agreement, why, then you will find them guilty. find that they just simply carried out their inde-pendent policy, you should find them not guilty, and the evidence must convince you beyond a rea-

sonable doubt.

[As reported in the March Journal, the jury was out only about a half hour before returning a verdict of "Not Guilty."

This installment completes the record of the trial to be presented in the JOURNAL.—Editor.]

#### Can You Help Locate These Members?

The aid of JOURNAL readers is solicited in locating the following members, mail to whom has been returned to the Association's central office. The last known address of each is given. Should you be able to provide information as to present residence, your advice via postcard or letter will be greatly appreciated.

Adams, Carroll E., General Delivery, Ontario,

Ament, Roland W., 448 S. Hill, Los Angeles 13,

Bott, A. R., Honey Grove, Texas.

Brekke, A. F., 7 Catherine Dr., R.F.D. No. 3. East St. Louis, Ill.

Bridges, Burlin C., 2nd Army Hdqs., Office of Surgeon, Memphis, Tenn.

Brooks, Rex H., 1121 N. 63rd St., Philadelphia 31, Pa.

Burnside, Otis H., Box 212, Greenville, Ala. Chambers, J. W. Jr., 111 E. Woodin, Dallas,

Conway, James C., Box 182, Fort Branch, Ind. Cox. Erston S., Blountsville, Ala.

Creel, Ben W., c/o Board of Health, Mobile, Ala. Crippen, Donald A., 1312 Willard, Houston, Texas.

Day, W. E., 217 Pleasant Ave., St. Paul 2, Minn. Eggert, Wm. E. Jr., Veterinary Station Hosp., Camp Hale, Colo.

Elliot, Herbert B., West Mansfield, Ohio.

Elmer, Everett K., D. Co. 2nd Bn., Camp Wheeler, Ga.

Evans, Ralph W., R.F.D. No. 5, Medina, Ohio. Fink, Carl. 1426 10th St., Port Arthur, Texas. Fish, Richard B., So. Van Pelt St., Philadelphia, Pa.

France, Walker, Boonville, Ind. Graham, J. A., Bldg. T218 Co. D, 2nd MTB, Camp Grant, Ill.

Hanson, J. C., Rolla, N. Dak.

Henderson, F. E., 2900 W. Sixth St., Little Rock, Ark.

Holden, William E., Williamsburg, Iowa.

Irby, L. E., Rt. 4, Box 284, Mobile, Ala.

James, H. P., c/o .Station Veterinarian, Camp Ellis, Ill.

Jameson, Lloyd E., 188 Outer Dr., Oak Ridge,

Kahl, Bernard D., Hamilton, N. Y.

Larson, K. E., Masonic Temple Bldg., Willmar, Minn.

Linder, Robert O., West Salem, Ohio.

McCasland, Foy V., Rt. No. 3, Goldthwaite,

McCornack, Rod C., 251 Q.M. Remount, APO 502, c/o P.M., San Francisco, Calif.

McMichael, Wm. W., Portland AAB, Sqd. M., Portland, Maine.

Miller, M. W., 425 Maryland Ave., St. Louis 8,

Moffat, G. C., Centuria, Wis.

Morse, J. B., Lake Drive Apts., Baltimore, Md.

Moughon, William C., Box 609, El Campo, Texas, Nims, R. M., Macclenny, Fla.

Nowlin, Hubert Al. Rt. 2, Pensacola, Fla.

Pyles, Ray S., Post Veterinarian, Moore General Hosp., Swannanoa, N. Car.

Rubenstein, Abraham M., 1251 Euclid Ave., Miami Beach 39, Fla.

Sivyer, Roland E., 5935 N. Montana Ave., Portland 11. Ore.

Stefanick, J. E., Class 44-48B Box 135, VAAF. Victorville, Calif.

Steinmetz, William E., Veterinary Detch., VAAF, Victorville, Calif.

Stockton, Albert E., Exc. Off. Co., APO 11268, c/o P.M., New York, N. Y.

Taylor, Clarence L., ORB ASF Repl. Depot, Camp Beale, Calif.

Thompson, Charles F., 603 22nd St. N.W., Washington 7. D. C.

Thompson, E. E., 1021 Grove Ave., Richmond.

Till, S. B., P. O. Box 705, LaGrange, Ga.

Townsend, William H., Box 771, Greyball, Wyo. Von Rosenberg, H. O., Hallettsville, Texas.

Weir, Howard T., Media, Pa.

Williams, J. M., Sqdn. M, 420th AAB Unit, Maxwell Field, Ala.

Wingerter, A. R., 27th Cav., APO 435, Ft. Clark, Texas.

Youree, F. R., Lebanon, Tenn.

#### APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws-Article X, Section 2.

#### First Listing

McCHESNEY, GERALD H.

1900 N. Broad St., Rome, Ga.

D.V.M., Alabama Polytechnic Institute, 1935. Vouchers: L. A. Mosher and B. E. Carlisle.

MARSTON, E. D.

188 Highland St., Manchester, N. H.

D.V.M., Alabama Polytechnic Institute, 1939. Vouchers: T. E. Brown and C. E. Chase,

MEADER, Ross E.

Little Rock, Iowa

D.V.M., Colorado State College, 1933.

Vouchers: E. E. Grove and W. E. Brown.

MUJICA, MARIO C.

Casilla 1065, Santiago, Chile.

M.V., Escuele de Medicina Veterinaria, Universidad de Chile, 1943.

Vouchers: J. San Miguel and O. Bastias.

WINKLER, GEORGE W.

205 Post Office Bldg., So. St. Paul, Minn. D.V.M., Kansas City Veterinary College, 1912. Vouchers: R. K. Somers and D. D. Tierney.

#### Second Listing

Austin, Francis M., West St., Belchertown, Mass.

Barthelme, L. F., 1418 Madison, Topeka, Kan-

Boyd, W. J., Harrow, Ont., Can.

Chinchon, Renato, Veterinario Sanitario, Cauquenes, Chile, S. A.

Cueva, Gerardo, Dassel, Minn.

Fincheira, Oscar, Casilla 805, Temuco, Chile, S. A.

Jacobson, H. W., Havre, Mont.

Norambuena, Miguel, Casilla 48, Santiago, Chile, S. A.

Papineau, William W., 2811 W. Olive Ave., Burbank, Calif.

Rafoth, Leslie J., Veterinary Detch., Fort Snelling, Minn.

Sotomayor N., Gonzalo, Guayaquil, Ecuador, S. A.

Tellejohn, A. L., 2518 Westwood, Nashville 5, Tenn.

#### 1945 Graduate Applicants

#### First Listing

The following are graduates who have recently received their veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (\*) after the name of a school indicates that all of this year's graduates have made application for membership.

#### Kansas State College\*

ALLEN, GEORGE W., D.V.M.

314 E. 15th St., Wellington, Kan.

Vouchers: E. E. Leasure and E. J. Frick. ALTER, RALPH E., D.V.M.

114 W. New St., Coffeyville, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

ANTHONY, WALLACE L., D.V.M.

353 N. Fifteenth St., Manhattan, Kan. Vouchers: E. E. Leasure and E. J. Frick.

BARBEE, JAMES M., D.V.M.

Sutton, Neb.

Vouchers: E. E. Leasure and E. J. Frick.

BERRIER, HARRY H. JR., D.V.M.

353 N. Fifteenth St., Manhattan, Kans. Vouchers: E. E. Leasure and E. J. Frick.

CARLSON, KENNETH C., D.V.M.

R.F.D. No. 3, Manhattan, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

CHAPMAN, GEORGE M., D.V.M.

Glasco, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

CLARK, DELBERT D., D.V.M.

Wheaton, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

COLES, EMBERT H. JR., D.V.M.

Experiment Station, Colby, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

FRIEND, JONATHAN D., D.V.M.

353 N. 15th St., Manhattan, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

GOETSCH, GERALD D., D.V.M.

Sabetha, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

HAINES, HAROLD M., D.V.M.

Box 345, Winfield, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

HAROLD, LAVERNE C., D.V.M.

Parker, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

HENSLEY, HARVEY J., D.V.M.

904 Bertrand, Manhattan, Kan. Vouchers: E. E. Leasure and E. J. Frick.

HOLBERT, ROBERT W., D.V.M.

Greeley, Iowa.

Vouchers: E. E. Leasure and E. J. Frick.

HOLT, JOSEPH N., D.V.M.

1215 Thurston St., Manhattan, Kan.

Vouchers: E. E. Leasure and E. J. Frick. HULL, MAURICE, D.V.M.

R. R. No. 1, Oak Hill, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

IRWIN, JESSE G., D.V.M.

Wilsey, Kan. Vouchers: E. E. Leasure and E. J. Frick.

JARRETT, R. M., D.V.M.

Waverly, Ill.

Vouchers: E. E. Leasure and R. P. Link.

JERNIGAN, LOYCE D., D.V.M.

R.R. No. 3, Osage City, Kan.

Vouchers: E. E. Leasure and E. J. Frick. Kelman, Alva C., D.V.M.

R.F.D. No. 1, Arlington, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

KENDALL, KENNETH, D.V.M.

1627 Laramie, Manhattan, Kan. Vouchers: E. E. Leasure and E. J. Frick.

LATHAM, LELAND A., D.V.M.

Washington, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

LOWREY, RALPH L., D.V.M.

Larned, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

McGargle, Paul F., D.V.M.

Gays Mills, Wis.

Vouchers: E. E. Leasure and E. J. Frick.

MANSFIELD, MANFORD E., D.V.M.

McCune, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

MONTGOMERY, LEON G., D.V.M.

353 N. 15th St., Manhattan, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

Morrow, James F., D.V.M.

Marysville, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

MOSIER, JACOB E., D.V.M.

Hoxie, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

MULLEN, GEORGE A. JR., D.V.M.

R.R. No. 3, McCune, Kan.

Vouchers: E. E. Leasure and E. J. Frick.

- NEWELL, LESLIE H., D.V.M.
  - 531 N. Manhattan Ave., Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- OLSON, JAY R., D.V.M.
  - R.R. No. 2, Glasco, Kan.
  - Vouchers: E. E. Leasure and R. A. Leeper.
- PETERSON, DUANE R., D.V.M.
  - 421 N. 16th St., Manhattan, Kan.
  - Vouchers: E. E. Leasure and E. J. Frick.
- PICKARD, RONALD, D.V.M.
  - Thompsonville, Ill.
  - Vouchers: E. E. Leasure and E. J. Frick.
- REAGOR, HARRY G., D.V.M.
  - 30 California Ave., Reno, Nev.
- Vouchers: E. E. Leasure and R. E. Witter.
- REED, THEODORE H., D.V.M.
  - Norton, Kan.
  - Vouchers: E. E. Leasure and E. J. Frick.
- RIDGWAY, JOE J., D.V.M.
- 1803 Anderson St., Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick. RIEGG, ALFRED, D.V.M.
- 1221 Thurston, Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- ROBERTS, GEORGE H., D.V.M.
  - Cawker City, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- ROSEBERG, ARTHUR R., D.V.M.
- Isle, Minn.
- Vouchers: E. E. Leasure and E. J. Frick.
- SHANNON, STEPHEN B., D.V.M.
- 1425 Laramie, Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- SMITH, DAVID L., D.V.M.
- 107 W. New St., Coffeyville, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- SMITH, JAMES, D.V.M.
  - 1634 Osage, Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- SMITH, JEAN C., D.V.M.
  - Mapleton, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- SMITH, JOHN W., D.V.M.
  - 1115 Bluemont, Manhattan, Kan.
- Vouchers: E. E. Leasure and R. A. Leeper.
- STIEFEL, MELVIN J., D.V.M.
  - c/o Alvin Andersons, Gypsum, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- STREETER, WILLIAM R., D.V.M.
  - 4510 Lloyd St., Kansas City, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- TUTTLE, THOMAS W., D.V.M.
  - 523 E. Milwaukee Ave., Fort Atkinson, Wis.
- Vouchers: E. E. Leasure and M. S. Cover. UNGLES, JAMES M., D.V.M.
  - Satanta, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- WALKER, EARL R., D.V.M.
  - 421 N. 16th, Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- WEDMAN, E. E., D.V.M.
- 421 N. 16th, Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.

- WREATH, GEORGE C., D.V.M.
- Rt. No. 1, Manhattan, Kan.
- Vouchers: E. E. Leasure and E. J. Frick.
- WRIGHT, RICHARD C., D.V.M.
  - 1708 Humboldt, Manhattan, Kan.
  - Vouchers: E. E. Leasure and R. P. Link.

#### Ontario Veterinary College

- CILLEY, GEORGE C. JR., B.V.Sc.
- Concord, N. H.
  - Vouchers: R. A. McIntosh and F. W. Schofield.
- DOWNING, G. E., B.V.Sc.
  - 920 Barstow St., Waukesha, Wis.
  - Vouchers: F. W. Schofield and C. D. Mc-Gilvray.
- DUKE, F. BENNETT, B.V.Sc.
- Delhi, Ont., Can. Vouchers: F. W. Schofield and R. A. Mc-Intosh.
- LUNN, EVERETT C., B.V.Sc.
  - Malta, Ill.
  - Vouchers: R. A. McIntosh and F. W. Scho-
- PARENT, MURRAY X., B.V.Sc.
  - Foley, Minn.
- Vouchers: F. W. Schofield and R. A. Mc-Intosh.
- POLONSKY, ARNOLD D., B.V.Sc.
  - Littleton, N. H.
  - Vouchers: F. W. Schofield and C. D. Mc-Gilvray.
- SAVAN, MILTON, B.V.Sc.
  - 467 Cypress St., Manchester, N. H.
  - Vouchers: R. A. McIntosh and F. W. Schofield.

#### Texas A. & M. College\*

- ANDERSON, ARTHUR A., D.V.M.
  - Monticello, Ind.
- Vouchers: R. C. Dunn and A. A. Lenert.
- CASS, JIM H. JR., D.V.M.
  - Box 177, College Station, Texas.
  - Vouchers: R. C. Dunn and A. A. Lenert.
- CLAYTON, JACK L., D.V.M.
  - 403 Poplar St., Marshall, Texas.
- Vouchers: R. C. Dunn and A. A. Lenert.
- CROCKETT, ROBERT M., D.V.M.
  - 314 W. First St., Tyler, Texas.
  - Vouchers: R. C. Dunn and A. A. Lenert.
- DAVIS, LAVELL T., D.V.M.
  - 1434 S. Crockett, Sherman, Texas.
- Vouchers: R. C. Dunn and A. A. Lenert.
- DERRYBERRY, JAMES P., D.V.M.
  - Box 4077, College Station, Texas.
- Vouchers: R. C. Dunn and A. A. Lenert. GRANZIN, OTTO C., D.V.M.
- Rt. B, Miles, Texas.
- Vouchers: R. C. Dunn and A. A. Lenert.
- GREEN, JOE W., D.V.M.
  - Santa Anne, Texas.
  - Vouchers: R. C. Dunn and A. A. Lenert.

GROVE, GAIL G. JR., D.V.M. Box 386, Astoria, Ore.

Vouchers: R. C. Dunn and A. A. Lenert.

KIRK, SAMUEL K., D.V.M.

Rt. No. 1, Box 72, Harrold, Texas. Vouchers: R. C. Dunn and A. A. Lenert.

KNIGHT, DELVIN R., D.V.M.

Box 1244, College Station, Texas. Vouchers: R. C. Dunn and A. A. Lenert.

KNIGHT, RICHARD G., D.V.M. Box 4187, Odessa, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

LEVIN, LEONARD, D.V.M.

9633 95th St., Edmonton, Alberta, Can. Vouchers: R. C. Dunn and A. A. Lenert.

LUTTEMAN, OTTO E., D.V.M.

P. O. Box 628, Port Arthur, Texas. Vouchers: R. C. Dunn and A. A. Lenert.

McMillan, Thomas O., D.V.M. Wichita Falls, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

MATTHEWS, WILL R., D.V.M. Box 485, College Station, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

MORAN, GUY G., D.V.M.

R.F.D. No. 2, Belton, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

Morley, William J., D.V.M.

7057 Pershing, University City, Mo.

Vouchers: R. C. Dunn and A. A. Lenert. PALMS, ANGE H., D.V.M.

5823 Palo Pinto, Dallas 6, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

RALSTON, NORMAN C., D.V.M. Rt. No. 1, Clarksville, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

RODRIGUEZ, E. FRANCIS JR., D.V.M. 86 Mary St., Alexandria, La.

Vouchers: R. C. Dunn and A. A. Lenert.

SANDERS, JACK M., D.V.M. R.F.D. No. 4, Marshall, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

SCHAPER, LOUIS O., D.V.M.

R.F.D. Box 307, Galveston, Texas. Vouchers: R. C. Dunn and A. A. Lenert.

SHARP, MARION W., D.V.M.

LaCoste, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

SMITH, LEONARD D., D.V.M. Rt. No. 1, Plains, Texas.

Vouchers: R. C. Dunn and A. A. Lenert. STANGER, RUSSELL S. JR., D.V.M.

Brazoria, Texas.

Vouchers: R. C. Dunn and A. A. Lenert. TISCHLER, HENRY, D.V.M.

Box 428, College Station, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

WILLIAMS, JAMES T., D.V.M.

Frisco, Texas.

Vouchers: R. C. Dunn and A. A. Lenert. WILLIS, JOHN C. JR., D.V.M.

Box 66, Eagle Lake, Texas.

Vouchers: R. C. Dunn and A. A. Lenert.

WINNE, JAMES A. JR., D.V.M. 638 W. 17 St., Houston, Texas. Vouchers: R. C. Dunn and A. A. Lenert.

#### Second Listing

#### Alabama Polytechnic Institute

Shuler, James M., D.V.M., 823 York St., Aiken, S. Car.

#### Cornell University\*

Bartz, Norman W., D.V.M., Rt. 8, Box 100, Rocky Mount Rd., Roanoke, Va.

Berrigan, Martin V., D.V.M., 198 Storer Ave., New Rochelle, N. Y.

Beyer, Theodore J., D.V.M., 27 Adrian Ave., New York, N. Y.

Colvin, A. Stanton, D.V.M., Wolcott, N. Y.

Drew, Donald R., D.V.M., Warwick, N. Y.

Duncan, Charles S., D.V.M., 512 Dryden Rd., Ithaca, N. Y.

Evans, Alvin, D.V.M., 61 E. 182 St., New York, N. Y.

Greer, Russell F., D.V.M., Boston Neck Rd., Suffield, Conn.

Guzman, Lisbeth K., D.V.M., 106 Quarry St., Ithaca, N. Y.

Haifleigh, William J., D.V.M., Valley Falls, N. Y.

Harmon, Howard, D.V.M., 127 Dryden Rd., Ithaca, N. Y.

Jones, Russell K., D.V.M., 20 Glenn Rd., Tuckahoe, N. Y.

Kiehle, Kenneth L., D.V.M., Livonia, N. Y. Langman, James H., D.V.M., Oxford, N. Y.

Lewis, Gilbert, D.V.M., 175-40 Grand Central Parkway, Jamaica 3, N. Y.

Lewis, Ralph W., D.V.M., Mooers, N. Y. Liebig, Philip H., D.V.M., Granville, N. Y.

Lopez, Robert A., D.V.M., 201 Williams St., Ithaca, N. Y.

McMurray, Homer F., D.V.M., Milford Rd., Nashua, N. H.

Mitchell, Grayson B., D.V.M., King Ferry, N. Y. Morrow, Gordon G., D.V.M., 309 Stewart Ave., Ithaca, N. Y.

Radeliffe, Harry, D.V.M., 1820 E. 13th St., Brooklyn, N. Y.

Ritter, Andrew S., D.V.M., Box 116, Hudson, N. Y.

Shaffer, Joseph C., D.V.M., 136-45 Hook Creek Dr., Rosedale, L. I., N. Y.

Stein, Hermann B., D.V.M., 37 Powerhouse Rd., Roslyn Heights, L. I., N. Y.

Walker, Robert D., D.V.M., 410 Elmwood Ave., Ithaca, N. Y.

Watson, James P., D.V.M., Lakewood, Pa.

Wester, Ralph F., D.V.M., Bristol Rd., Clinton, N. Y.

Wilcox, Harrison J. Jr., D.V.M., New York State Veterinary College, Cornell University, Ithaca, N. Y.

Zeller, Carleton M., D.V.M., 228 Lenox Ave., Oneida, N. Y.

#### U. S. GOVERNMENT

Army Horse-Breeding Program.-Perish the thought that the remount service of the Army has abolished its horse-breeding program as rumored. On the contrary, that the Army is seeking stallions and mares of suitable types for stocking three remount depots is the subject of an April (1945) release from the office of the Quartermaster General. The installations will be at Fort Robinson, Nebr., Fort Reno, Okla.; and Pomona, Calif. The change in no way affects the policy of procuring high quality stallions and mares from dealers, although remount officers are charged with looking about for suitable replacements in their respective areas, in order to provide the right kind and number of stallions to maintain the required strength, which in the last two years has not been found possible. In other words, the Army has required more remount service stallions than it was able to procure.

There will be no effort made to raise horses at these depots. In the fall of the year, the colts, both male and female, will be offered for sale. The colts, however, will be castrated before disposal and unsuitable ones will have been weeded out at weaning time. The others will be handled and trained until their third year and either kept for stallions and brood mares or put on sale.

Inter-American Conference on Agriculture.—
The Office of Foreign Agricultural Relations of the USDA has announced that the third Inter-American Conference on Agriculture will be held at Caracas, Venezuela, July 24, 1945, for sessions of about two weeks. One of the chief subjects to be reviewed is the recommendation of the United Nations Monetary Conference held at Bretton Woods. Other topics will be agricultural credit, production, and postwar adjustment; foodstuffs and raw material; markets and transportation; and agricultural statistics. Further information is obtainable at the Office of Foreign Agricultural Relations, Washington 25, D. C.

Army Medical Library Appointments.—The Army Medical Library has appointed Mr. Wyllis Eaton Wright, of New York City, as the librarian (a newly created civil service position), and Miss M. Ruth MacDonald, of Detroit, Mich., as chief of the Catalog Division and head cataloger, according to the Office of The Surgeon General.

Mr. Wright has been associated with the New York Public Library since 1927, for the past nine years as chief cataloger. For three years he was librarian at the American Academy in Rome. He was also assistant in the library of Williams College, from which he was graduated in Arts and took his master's degree in 1926.

Miss MacDonald, who is one of the outstanding cataloging administrators in the country, was head cataloger at the Detroit Public Library. She was graduated in Arts and Library Science from the University of Washington in her native state of Washington.

#### AMONG THE STATES

#### Alabama

Junior Veterinary Medical Association.—The Auburn chapter at Alabama Polytechnic Institute has inaugurated a special service for their alumni and for readers of the Auburn Veterinarian. A literature review committee has been formed to gather all of the information available in the library covering any question submitted from the field. This information will be cleared through the member of the faculty most closely connected with that work,

#### Alberta

Annual Report of the Animal Pathologist.—The scope of work carried out and the animal disease situation of the province are shown by the 1944 report of Acting Animal Pathologist Ross Walton, V.S., B.V.Sc. The service includes diagnosis, blood testing, preparation of autogenous vaccines, field investigations, and an educational course on livestock disease for farmers and fur producers. A total of 1,625 specimens was examined, not including blood samples of cattle and poultry. The laboratory prepares its own mink distemper vaccine—tissue type.

#### Arkansas

Rabid Raccoon.—A woman was seriously injured and her two daughters were clawed and bitten, at Amity, when they were attacked by a rabid raccoon. Mad dogs and foxes have been reported in other parts of the county.

Anthrax Control.—Cross County is conducting a campaign of vaccination against anthrax. The work had to be suspended late in March because of high water, but now will be carried to completion by a member on the staff of State Veterinarian J. S. Campbell, Little Rock.

5/FRANK HURLBUT, Yellville.

[Dr. Hurlbut, Yellville, in sending us these clippings from the *Arkansas Gazette*, indicates that he is keeping alert to the wider aspects of veterinary practice.—Ep.]

#### California

X-ray May Produce Anestrus in Dairy Cows. -A Guernsey breeder, Mr. David O. Brant, visualizes a time when x-ray may produce anestrus in commercial dairy cows so that maximum production may be continued for 3 or 4 years. He also sees 17 calves a year from good matings, by removing ova just before natural ovulation, fertilizing with the proper semen, and implanting these in other nondescript cows. He believes that these visions are not more far-fetched for the coming generation than were such accomplishments as the Guernsey cow, which produced 30,000 lb. of milk, or the successful insemination of 100 females from a single service, during the present generation.-From Guernsey Breeders J., April 15, 1945.

#### Canada

#### Canada Modifies Dog Entry Certification

Ministerial Order No. 62, issued April 30, 1945, by the Canadian Deputy Minister of Agriculture, H. Barton, supersedes Order No. 59 of August 29, 1944 (see the JOURNAL, November, 1944, pp. 302-303) and allows certification by a licensed veterinarian in the United States without the endorsement of a veterinary inspector of the U. S. Bureau of Animal Industry. The old order required that dogs for entry into Canada from the United States had to be accompanied by a certificate stating that they were free from any symptoms of contagious disease, had not been exposed to rabies, nor kept for a period of six months preceding shipment within a radius of 50 miles of any case of rabies.

The new order includes the original provision but provides also that a certificate will be accepted which is signed by a licensed veterinarian of the state of origin, certifying that the dog is free from any symptoms of contaglous disease; that so far as can be determined it has not been exposed to rabies and that it has been vaccinated against rabies within a period of six months prior to shipment. The complete order reads as follows:

#### CANADA

DEPARTMENT OF AGRICULTURE
PRODUCTION SERVICE—HEALTH OF ANIMALS
BRANCH

Ottawa, April 30, 1945.

MINISTERIAL ORDER No. 62

Under and by virtue of the authority conferred upon me by Section 17 of the Animal Contagious Diseases Act, Chapter 6, R. S. C., 1927, I do hereby order that:—

All dogs for entry into Canada from the

United States of America shall be accompanied by a certificate in one of the following forms:

- (a) A certificate signed or endorsed by a veterinary inspector of the United States Bureau of Animal Industry certifying that the dog has been inspected and found free from any symptoms of contagious disease; that the dog has not been exposed to the infection of rabies and that no case of rabies has occurred within a radius of fifty miles of the place in which the dog has been kept for a period of six months immediately prior to date of shipment.
- (b) A certificate signed by a licensed veterinarian of the State of origin certifying that the dog has been inspected and found free from any symptoms of contagious disease; that so far as can be ascertained it has not been exposed to the infection of rabies and that it has been vaccinated against rables within a period of six months of the date of shipment.

Performing dogs entered for temporary stay and kept under direct control while in Canada shall be exempt from this Order.

My Orders of August 29, 1944, and March 24, 1945, are hereby cancelled.

Dated at Ottawa this twenty-sixth day of April, one thousand nine hundred and forty-five

(Signed) H. BARTON,

Deputy Minister, Department of Agriculture.

#### Colorado

Degrees Granted.—At the commencement exercises at Colorado State College of Agriculture and Mechanic Arts held on April 20, 1945, two candidates, Wendell H. Krull and Walter S. Mason, Jr., received the degree of doctor of veterinary medicine. Dr. Krull, who holds a Ph.D. from the University of Michigan, and who has had several years' experience in the Zoölogical Division of the Bureau of Animal Industry, has been appointed professor of Parasitology and Zoölogy. Dr. Mason has entered practice at Clinton, Okla.

Dr. William H. Feldman, research pathologist of the Institute of Medical Research, Mayo Foundation, Rochester, Minn., was granted the honorary degree of Doctor of Science.

#### Connecticut

Suggests Dog Owners Pass Test.—A new thought, expressed by a member of the Forrestville obedience class, suggests that the prospective owner of a dog should be subjected to a test to determine, and we quote, "whether he is worthy of the animal's devotion and capable of caring for him". The unrestrained dog owned by the indifferent or ignorant person is the chief cause of trouble, and making the

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owner responsible for the acts of his dog would do much to reduce friction in many communities.—From the Bristol Press, quoted in Modern Dogs.

The State Association has elected J. V. Smith, South Norwalk, president; Major Richard Gilyard, Waterbury, vice president; G. E. Corwin, Hartford, secretary-treasurer.

#### Florida

Personal.—Dr. J. W. Henagan, formerly located in Bradenton, purchased Dr. H. M. Clarvoe's veterinary hospital in Tampa, and is located in practice there.

#### Illinois

Chicago Veterinary Medical Association.— The May meeting was held on V-E day, May 8. The program was headlined by a sound film depicting the action of Coramine, along with an explanatory discussion of its use in veterinary practice by Mr. Fred E. Houghton, of Ciba Pharmaceutical Products, Inc. The next meeting, to be held on June 12, will be a social gathering at which the wives will be entertained.

Chicago Veterinary Corps Officers Meet.—The highlight of the April meeting of Veterinary Corps officers at the Chicago Quartermaster Depot was an illustrated lecture on mastitis by Dr. C. S. Bryan, head, Department of Surgery and Medicine, Michigan State College. Fifty officers were in attendance. Colonel Fred C. Waters, U. S. Army, depot veterinarian, presided.

After reviewing the fundamental principles of classification, etiology, physical detection, and laboratory diagnosis of mastitis, Dr. Bryan summarized recent developments in udder infusion treatments. Slides were used to illustrate many interesting clinical aspects of the disease. He suggested a six-point program in attacking mastitis control on a herd basis: (1) sanitary milking procedures; (2) good herd management practices such as barn sanitation, proper stalls and correct bedding; (3) isolation of infected animals; (4) elimination of infected animals by slaughter; (5) early and accurate diagnosis; (6) early and proper treatment.

The next guest speaker to address the Chicago Veterinary Corps officers will be Captain Robert E. Storm, who will discuss the Stader splint. Motion pictures illustrating surgical techniques in Stader splint application also will be shown. Prior to his entry into military service, Captain Storm was a staff member of the North Shore Animal Hospital, Evanston, Illinois.

#### Indiana

New State Veterinarian.—Dr. G. E. Botkin, who recently succeeded Dr. J. L. Axby as state

veterinarian, was born July 11, 1888, on a farm in Randolph County, Indiana, and received his



Dr. G. E. Botkin

preliminary education in the local grade and high schools. He was graduated from Indiana Veterinary College in 1912 and entered general practice at Mooreland, where he remained for fifteen years. In 1927, he moved to Marion, Indiana, where he has since continued practice.

He married Edna McGunegill in 1909. There are three sons, two of whom are in the service.

The other veterinary members of the Indiana State Livestock Sanitary Board, of which Dr. Botkin is chief administrative officer, are Dr. R. F. Smith, of Boswell and Dr. E. A. Rayl, of Kokomo, both of whom were recently appointed. Another new appointee is Mr. Robert L. Hogue, of Silver Lake, who represents the poultry industry of the state. Hold-over appointees are Mr. Randolph Core, of Franklin, representing dairy cattle and Mr. Carlos Palmer, of Albion, representing other livestock.

Northwestern Association.—At the dinner session of the Northwestern Indiana Veterinary Medical Association held at Tippecanoe Country Club, Monticello, April 26, the guest speaker was H. Griest, M.D., formerly medical missionary at Point Barrow, Alaska.

s/Dr. N. K. DECKER, Secretary.

Personal.—W. T. Miller has resigned his position with the Beebe Biological Laboratories and has joined the staff of Pitman-Moore Laboratories, Zionsville.

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Three Panels Discuss Sheep Parasites and Disease Control.—Mr. Harry C. Boyts, Live Stock Commissioner, Sioux City, sends us reports of three round-table meetings on sheep parasite and disease control. Dr. L. D. Frederick, chief veterinarian for Swift & Co., acted as chairman for, and participated as a speaker in, all of the meetings.

A panel of ten speakers was assembled at Sheldon, Iowa, on March 6. Dr. Frederick discussed the control of, and treatment for, tapeworms, as well as plans and rations for avoiding the formation of urinary calculi.

Dr. C. C. Franks, Division of Animal Industry, Des Moines, presented a review of measles in feeder lambs and also of the requirements for interstate shipment.

Dr. J. A. Barger, U. S. Bureau of Animal Industry, Des Moines, explained the tick problem, and the advisability of dipping.

Dr. C. A. DeValois, practitioner at Sheldon, spoke about the use of phenothiazine in the control of nodular worms, the advantages of pasture rotation, and factors in prevention and correction of pregnancy disease.

At Sioux Falls, S. D. on March 7, there was a panel of 11 speakers. Dr. Frederick considered the control of tapeworms, of measles in feeder lambs, and the care of lambs in transport.

Dr. N. F. Carlson, Newell, assistant state veterinarian, answered questions about navel infection, and the control of parasites by management or by destruction with drugs.

Dr. Harry Halverson, Flandreau, practitioner, surveyed the evidence as to ways of avoiding, controlling, and treating lambing paralysis.

Dr. G. S. Harshfield, Brookings, college veterinarian, outlined the worming procedure, touching on lungworms, and scours caused by stomach worms.

**Dr. R. S. Robinson,** Pierre, of the Live Stock Sanitary Board, summarized the requirements for importation and interstate shipment.

Dr. Neil Plank, Pierre, Bureau of Animal Industry, touched on the problem of tick infestation and elimination.

Dr. E. S. Dickey, Ottumwa, of John Morrell & Co., replied to questions on urinary calculi and water belly.

At Norfolk, Neb., on March 8, there was a panel of six speakers. Dr. Frederick again briefed the problem of tapeworms and other intestinal parasites. He also touched on navel infection and urinary calculi.

Dr. F. O. Lundberg, Wausa practitioner, succinctly covered the subject of lambing paraly-

Dr. J. S. Snyder, Lincoln, Bureau of Animal Industry, conversed about the disinfection of

trucks, the regulations covering the importation of lambs, and the stomach worm and wireworm treatment and control problems.

In addition to the veterinarians mentioned, each panel included lamb feeders, extension husbandmen, and others interested in lamb production. These men debated such subjects as when to dock lambs, the type of lamb to raise, the best minerals to feed, ways to get the lambs on feed, preparing the lambs for shipment, caring for and feeding them enroute, and related topics.

This kind of program arrangement was well received, and may mark the start of a new type of farm meeting in this area.

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East Central Association.—The report of the March meeting of the East Central Iowa Association at Tipton announces an address on "Building Better Rural Communities Through Cooperative Activities of Vocational Agriculture Instructors and Veterinarians" by Mr. J. Morris Christy (B.S., I.S.C., '38 and M.S., I.S.C., '42), vocational agriculture instructor of the Tipton Consolidated Schools for the past four years. [Intrepid Eastern Iowa seems to have scored another first down in veterinary service.-Ed.] The report also announces an address by Dr. Joe W. Giffee, Cedar Rapids, on "The Role of the Veterinarian in Relation to Public Health and the Political Economy." Dr. M. A. Emmerson, head of veterinary obstetrics, Iowa State College, spoke on the fundamentals in treating bovine sterility; Dr. R. M. Hofferd, Corn States Serum Company, Cedar Rapids, reported experiments on hog cholera; and Dr. John B. Bryant, Mt. Vernon, managed the question box.

Waxy Corn.—Over 16,000 acres of a strain of maize intended to replace tapioca was planted in the state last year. The yield was around 55 bushels per acre. The main source of tapioca is the East Indies, now occupied by Japan.

East Central Society.—A dinner meeting was held at the Hotel Montrose, Cedar Rapids, on April 12. The following program was presented.

L. H. Scrivener, program chairman, discussed "The Economic Importance of the Poultry Industry."

L. C. Swain, of Wellman, presented an illustrated review of a University of Illinois Bulletion on the treatment of chicks infected with pullorum disease. Seven sulfa drugs were used.

A poultry clinic was held at the Spencer Animal Hospital following the program.

s/I. P. IRWIN, Secretary.

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#### Kansas

The Junior American Veterinary Medical Association announces election of the following officers for the spring term: Jean C. Smith, president; Donald M. Trotter, vice president; Myron C. Kromminga, secretary; George T. Woods, treasurer; George W. Allen, sergeant-atarms; and Paul A. Keesee, critic.

Personal.—Capt. W. T. Oglesby, V.C., has just returned to duty following a six weeks furlough after a tour of foreign service.

Senior Students at Kansas State Veterinary College were conducted on a "Foods Hygiene" trip to Kansas City in January. They visited packing plants, pharmaceutical houses, and biological farms.

#### Kentucky

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Capt. D. L. Proctor, V.C., writes from India: "Today, to celebrate six months overseas, we went tiger hunting and killed a 500 lb. Bengal tiger. This tiger had killed a 1,000-lb. draft Brahma cow and had carried her a mile



-From The Blood Horse

Captain D. L. Proctor, V.C., of Lexington, is shown with a leopard he recently shot in India.

through jungle grass. He was 10 ft. long. One can't imagine the supple grace of these large cats. It is positively awe-inspiring."

Later he wrote: "Last Saturday I shot a rogue elephant. This rogue had killed six natives. After trailing him for about three hours, I killed him with three shots behind his ear from a Garand service rifle. I shot this same beast about four weeks ago, but the wounds hadn't bothered him very much, apparently. Elephants are extremely hard to kill, and a shot must not only be accurately placed, but the right angle is necessary for a mortal wound."—From The Blood Horse, April 7, 1945.

#### Maryland

Dr. Thomas Parran, Surgeon General, of the Public Health Service, announces the arrival of a microscope which will magnify the windpipe of a mosquito to a diameter of about two inches. This electron microscope weighs a ton and costs \$13,000. It is being used by the National Cancer Institute, Bethesda, and by other divisions of the National Institute of Health.

#### Massachusetts

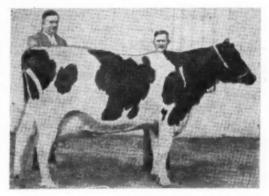
State Association.—The Massachusetts Veterinary Medical Association held its monthly meeting at the Hotel Vendome, Boston, on Friday, April 27. Veterinarians throughout New England had been invited, and many attended.

President James Farquharson of the AVMA made a return appearance with a new assortment of films depicting various surgical procedures which he performs with facility. The program began at 3:00 p.m.; there was a business meeting at 5; and dinner at 6:15, followed by more pictures accompanied by the ready flow of explanation which always accompanies a presentation by Dr. Farquharson.

S/H. W. JAKEMAN, Secretary.

#### Michigan

A Michigan Prodigy.—Marquette Pride de Kol is the leader over all breeds in butterfat production by 4-year-old cows. • The record



-Holstein-Friesian Photo, 1945 Marquette Pride de Kol

made on three daily milkings in 365 days was 1,152.2 lb. of butterfat from 27,952 lb. of milk. The test was supervised by Michigan State College, in coöperation with the Holstein-Friesian Association of America. This prodigy is a member of the herd at the State House of Correction in Marquette. She was purchased in Minnesota in June, 1942.

Personal.—Dr. I. Forest Huddleson has reported on a differential diagnosis of bovine

brucellosis based upon the bactericidal action of blood plasma. He found that citrated blood plasma from immune cows would inhibit the growth of *Brucella abortus* while that from infected cows failed to inhibit growth in the same medium.

#### Minnesota

Farmers' Vaccination Bill.—At the time the legislature adjourned, April 19, this bill was apparently deeply buried in the committee, thanks to the efforts of veterinarians—particularly those of Dr. W. L. Boyd.

Cattle Sales Law.—This law, which becomes effective July 1, 1945, covers cattle over 6 months of age (except steers) and applies to cattle sold at public auctions, sales barns, private stockyards, mortgage foreclosures or sales by order of any court. It also applies to cattle leased or loaned for breeding purposes. The law provides that a certificate showing the animal to be free from brucellosis be issued at the time and in the manner prescribed by the State Live Stock Sanitary Board, and that an approved certificate of such test be made available at the time of sale.

#### Nebraska

4H Twins Fight Grubs.—Merle and Berle Mercer, 17, of Thomas county, won second prize, and their dad, L. D. Mercer, third prize during livestock conservation week in a contest demonstrating the control of cattle grubs, according to the *Omaha Daily Journal-Stockman* of April 3, supplied by Dr. W. T. Spencer, livestock commissioner. Interesting as these awards are as local news, their importance lies in their national meaning—community work in grub control and its immense potentiality in the mastering of a major livestock menace.

Omaha Daily Journal-Stockman.—An editorial appearing on April 23 calls attention to the fact that hog cholera has become increasingly important during recent years, and that the number of unvaccinated pigs increases the danger of an epizoötic. The editorial is reproduced herewith:

#### Pig Hurdle

One of the hurdles which this spring's crop of pigs, admittedly too small for the needs of the nation, has to get over before it reaches marketable stage is the danger of a cholera epidemic. Veterinarians have observed that in spite of widespread vaccination, cholera outbreaks have shown a gradual increase in the past five years, and they realize that the seeds for serious losses are present on the farms of the nation if proper preventive measures are not taken this year.

Proper precautions against cholera include sanitation to keep pigs healthy and free from diseases and parasites in the early weeks of their life, and immunization at or near weaning time. Since there is no cure for the disease once it has developed, and in view of the relatively low cost per head of vaccination when the pigs are small, it is obviously foolish to take any chances with cholera, which still ranks as the number one enemy of American hog producers.

#### New York

Rabies Quarantine Unconstitutional.-In the case of Lawrence Steinberg versus the New York City Board of Health, Justice Charles W. Froessel in the Supreme Court of Jamaica, Queens, denounced the quarantining of rabiessuspected dogs as "arbitrary," "unreasonable" and "unconstitutional." The ordinance attacked by the plaintiff requires that all unleashed dogs seized on a public thoroughfare must either be destroyed within forty-eight hours or held in quarantine for six months at the owner's expense. The Justice pointed out that the owner is not given the opportunity to ascertain whether or not his dog has the disease, that of the 2,500 dogs picked up all but 500 were destroyed, and that the owner not wanting his dog killed has only the alternative of paying a private veterinarian upward of \$180 for the dog's keep during the quarantine period. Prominent figures in humane, public health, and veterinary circles testified for each side.

College Paper Hails Faculty Member.—Walter L. Williams recently entered his ninetieth year, and upon that occasion *The Ithacan* carried a review of his sixty-five years in the veterinary profession.

Beginning as a country school teacher, Dr. Williams entered the Illinois Industrial University (now University of Illinois) in 1875, and studied veterinary science under Dr. F. W. Prentice. Two years later, he left the school because his \$20 a month job as a janitor was given to a married man, but he entered the graduating class of the Montreal Veterinary College in October, 1878, and studied physiology and pathology under Dr. William Osler.

Upon graduation, Dr. Williams returned to Illinois to make farming his life work, but lacking the funds to buy a farm, he began to care for sick animals in the neighborhood. In 1891, a severe attack of influenza left him too weak to practice and he went back to teaching. Dr. Williams accepted the chair of veterinary science at Purdue University, but transferred to Montana Agricultural College at Bozeman in 1893; moving again when he was accepted as professor of surgery, zoötechnics, obstetrics, and

jurisprudence, on the faculty which Dr. James Law was assembling for the newly-formed New York State Veterinary College. This college opened on Sept. 15, 1896, and Dr. Williams has been associated with the faculty continuously since its inception, although he became professor emeritus of veterinary surgery in 1921.

The emphasis of Dr. Williams' work at Cornell has been on reproductive problems, and on this subject he has written several books and numerous articles which have made his name and his inimitable style familiar to veterinarians all over the world.

Sulfonamide Drug Sales.—Over-the-counter sales of sulfonamide drugs is prohibited, without a prescription, in New York City. This holds true for all forms of the drugs, whether for internal or external use, except nose drops containing not more than 2.5 per cent of the sulfa drugs, and adhesive bandages containing sulfathiazole.

#### Ohio

Dr. D. C. Hyde Appointed State Veterinarian.

—Governor Frank J. Lausche announced on Jan. 15, 1945, the appointment of Dr. D. C. Hyde (O.S.U., '10) as state veterinarian to suc-



Dr. D. C. Hyde

ceed Dr. Frank L. Carr. Dr. Hyde had been assistant state veterinarian since 1916. In his new position, he is in charge of the Division of Animal Industry of the State Department of Agriculture.

Born and raised on a dairy farm at Sullivan, Ashland County, Ohio, Dr. Hyde graduated from the local high school and then took one year of college preparatory work before entering the College of Veterinary Medicine at Ohio State University in 1907. After receiving his D.V.M. degree, he entered the service of the Division of Animal Industry and was appointed assistant state veterinarian six years later. In addition to his other duties in recent years, Dr. Hyde has served as chairman of the State Veterinary Committee of the Procurement and Assignment Service, War Manpower Commission

#### Ontario

The McGilvray Portrait Fund.-In order to preserve the historical traditions of the Ontario Veterinary College, University of Toronto, a committee has been formed to collect funds for the painting of a portrait of the recently retired principal, C. D. McGilvray, to be hung in the archives of the college at Guelph. The committee is composed of Principal Andrew L. MacNabb, successor to C. D. McGilvray; Dr. Chas. A. Mitchell, Dominion Animal Pathologist, Hull, Quebec, chairman; and Dr. J. A. Campbell, Toronto practitioner. Principal Mac-Nabb will act as the treasurer. Alumni who graduated under the late Principal A. A. E. Grange (1908-1918) have already fulfilled their voluntarily assumed duty in that connection; those of 1918-1945 are urged to fall in with the spirit of the task of sending in contributions that will enable the committee to complete its laudable project. Keeping fresh the history of veterinary education in the Western Hemisphere will have more than sentimental importance to the world's future veterinary service.

#### Texas

State Association's New Office.—The Texas Veterinary Medical Association has established a permanent office in the W. T. Waggoner Building, Fort Worth, a long desired development, says the Texas Veterinary Bulletin, the Association's monthly. The secretary-editor, Dr. E. A. Grist will be assisted in his clerical work by Mrs. L. J. Brannon, wife of Dr. Brannon, assistant in the local BAI laboratory, maintained in connection with the work of the State Live Stock Sanitary Commission.

Personal.—Capt. Herbert I. Ott, who survived the "March of Death" as a prisoner of the Japanese, has been returned to the Gardiner General Hospital in Chicago for observation, before being sent home on furlough.

#### Wisconsin

The Northeastern Association.—About 40 members attended a meeting on April 23 at the Appleton Hotel, Appleton, and enjoyed a round-table discussion of the vaccination of calves and adult cattle against brucellosis. The

pending legislation on this subject was summarized by Dr. J. S. Healy, Bureau of Animal Industry, and Dr. V. S. Larson, state veterinarian.

At the dinner, to which the veterinarians brought their wives, the speaker was Judge Joseph McCarthy. He presented an interesting discussion of conditions in the South Sea Islands, where he was stationed until recently.

S/WM. MADSON, Secretary.

Personal.—Major R. A. Jones, Marinette, has been on duty in China, where he received his promotion. He has been overseas for a year and a half.

#### Foreign

#### Ceylon .

Veterinary Science Newsletter.—The June (1944) issue of the Newsletter on current developments in veterinary medicine, furnished monthly to the Office of War Information by the editors of the AVMA JOURNALS, for world distribution, is reprinted in full in the December (1944) issue of the Ceylon Journal of Veterinary Science, under the following introductory remarks:

Through the courtesy of Mr. Robert L. Buell, American Consul, Columbo, we have been able to procure a copy of the veterinary newsletter sent out by the United States Office of War Information, at Bombay. We thank Mr. Buell for getting us this copy. We have no doubt it will interest our readers. All future newsletters we hope we shall be able to print and send out to all our members.

American veterinarians will be gratified to know that the small effort their national association is making towards maintaining mutual relations with the world of veterinary science, during these years of interrupted communications, is not in vain.

#### French West Africa

An Outbreak of Plague.—An outbreak of 567 cases of plague occurred at Dakar in 1944, 91 per cent of which were fatal. The occurrence was mainly among natives, though 1 Syrian and 3 French Europeans were among the victims. While plague has occurred at Dakar at various times in the past, this was the first outbreak since 1937. The cause was the wartime influx of natives who had to sleep in shifts huddled on the sand floors of their thatched huts.—From The Bulletin of the U. S. Army Medical Department.

#### Great Britain

Index Veterinarius. — In a recent article [Bull. M. Libr. A., 32, (1944): 230], statements

appeared which may mislead readers concerning the publication of Index Veterinarius.

It would be inferred from this article that the issue of *Index Veterinarius* is *often* delayed by at least six months, and that publication ceased at the end of 1942.

The author may not have understood the announcement on the front cover of *Index Veterinarius* concerning the dates of issue. This announcement shows the indexing period as January to June, or July to December, according to the half year covered, and in each case shows the date of issue as the December or June following the close of the indexing period—an interval of six months in each case. This interval is the time taken to prepare the manuscript for the press and for the printing.

Publication has been continuous since 1933 and still continues.

s/W. A. Pool, Deputy Director, Imperial Bureau of Animal Health, Veterinary Laboratory, New Haw, Weybridge, Eng.

#### Italy

Brucellosis Control in Italy.—The most up to date American method of cattle vaccination from vaccine manufactured in Rome—is now

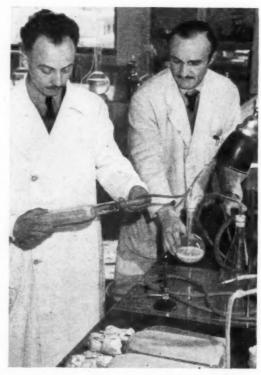


Fig. I—Professor Vittorio Mazza Racchio (left), director of the veterinary section of the Institute of Public Health, Rome, assisted by technician Armando Montesperelli, inoculates culture media to produce

being carried out in Italy to safeguard herds depleted by German confiscations and to protect dairy herds from brucellosis. The new vaccine was introduced into Italy five months ago after an order was placed with the BAI.



Fig. 2—Dairy cattle at a farm near Rome are the first to be vaccinated with the new vaccine.

Lt. Col. Rowland W. Rushmore (Jefferson, Iowa), head of the Commission's veterinary branch, had the first cultures he received sent to Rome's Instituto Superiore di Sanità, with instructions for producing the vaccine on a large scale.

The laboratory is now in the process of vaccinating all calves from 6 to 8 months old in the largest herd—some 2,000 cattle—in the vicinity of Rome.—Headquarters Allied Commission, APO 394.

#### New South Wales

Livestock Disease Report.-Although there is nothing spectacular to report on animal diseases, it is obvious that improvement of the war situation in the Pacific theater has removed considerable anxiety, not the least of which was the attempt to bring dogs into the war zones, illegally. A constant threat to the livestock industry is the spreading of the Buffalo fly (Lyperosia exigua) within the country and also the Stickfast flea (Echidnophagia gallinacea) of poultry from southern Queensland to South Australia. Difficulties arise from the interchange of these parasites between wild and domestic animals. Australia is always faced with the danger of swine fever (hog cholera). For New South Wales, account is given of the extensive operations of the Glenfield Veterinary Research Station in brucellosis, pullorum disease, swine fever, bovine mastitis, artificial insemination, sheep blowfly, toxemic jaundice of sheep, sheep mites, swine erysipelas, swine pox, swine brucellosis, and encephalitis of horses. Intramural transfers supervised were 1,893,715 head of sheep, cattle, horses and swine. Anthrax, once a veritable plague, is no longer a grave problem. The dipping of cattle for the control of tick was widely practiced. The bovine contagious pleuropneumonia situation is

pronounced "not so satisfactory," although the great dairy districts of the coast and County Cumberland are free of that disease. The total was 24 outbreaks, 244 deaths, and 6,325 cattle quarantined.

The livestock population of New South Wales as of March 3, 1944 is given as: horses, 465,672; cattle, 3,143,378; sheep, 56,837,300; swine, 561,294. The division chief is Max Henry, Sidney.

#### New Zealand

To encourage more New Zealanders of suitable type to enter the veterinary profession, the government has within the past two years instituted scholarships to the value of £100 per annum. On graduating, the beneficiaries are under an obligation to enter the service of the New Zealand Government, and to remain in it for at least five years.

The New Zealand Stock Remedies Act provides that "proprietary remedies can only be registered for sale provided they meet with the approval of a board composed of veterinarians and pharmacists. The board is also given powers to restrict or suppress exaggerated claims appearing in advertisements of the remedy."—[Canad. J. Comp. Med., 1945.]

#### COMING MEETINGS

- Idaho Veterinary Medical Association. Salmon City, Idaho, June 22-23, 1945. Phil H. Graves, Box 196, Idaho Falls, Idaho, secretary.
- Utah Veterinary Medical Association. State Agricultural College, Logan, Utah, June 25-26, 1945. O. G. Larsen, 641 E. 7th St., No., Logan, Utah, secretary.
- American Veterinary Medical Association.
  Business sessions only of Executive Board and House of Representatives. Palmer House, Chicago, Ill., Aug. 20-22, 1945. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.
- Short Course for Veterinarians. Purdue University, Lafayette, Ind., Oct. 11-12, 1945. C. R. Donham, Dept. of Veterinary Science, Purdue University, head.

#### STATE BOARD EXAMINATIONS

- Illinois—The Veterinary Examining Committee of the Illinois Department of Registration and Education will hold examinations on July 30-31, 1945, at 106 N. La Salle St. Chicago. Applications should be filed with Supt. Phillip M. Harman, Department of Registration and Education, Springfield, twenty days prior to these dates. Address inquiries to L. A. Merillat, chairman, 600 S. Michigan Ave., Chicago 5, Ill.
- Massachusetts—The Massachusetts Board of Registration in Veterinary Medicine will hold

examinations for registration in this state on July 17-18, 1945, at the State House, Boston. The latest date for filing applications is July 3, 1945. Address inquiries to Dr. B. S. Killian, secretary of the board, Room 413-N, State House, Boston 33, Mass.

New Jersey—The New Jersey Board of Veterinary Medical Examiners will hold their next examinations at the State House, Trenton, N. J., June 22-23, 1945. Address inquiries to J. A. S. Millar, secretary of the board, Box 318, Deal, N. J.

North Carolina—The North Carolina State Veterinary Examining Board will hold its annual examinations on June 12-13, 1945, at the O'Henry Hotel at 9:00 a.m. Oral and written examinations will be given and applications must be filed prior to examinations. Address: P. C. McLain, secretary-treasurer, R.F.D. No. 1, High Point, N. Car.

Virginia—The Virginia State Board of Veterinary Examiners will offer an examination for license to practice veterinary medicine in Virginia on Friday, July 6, 1945, at the John Marshall Hotel, Richmond. The examination begins at 9:00 a.m. Candidates for the examination should write to the secretary at once for application forms. Address: I. D. Wilson, secretary of the board, Blacksburg, Va.

#### MARRIAGES

Capt. Harold Henig, V.C. (Wash., '42), 933 W. 11th St., Gary, Ind., to Miss Psyche G. Spiropoulos, Gary, Ind., April 28, 1945.

#### **BIRTHS**

To Dr. (O.S.U., '35) and Mrs. George Berger, 1107 N. Kenwood Ave., Austin, Minn., a son, Asa John, Dec. 18, 1944.

To Cpl. and Mrs. Michael Randolph (Dr. Florence E. Keith, Corn., '44), Oswego Drive, Greenlawn, N. Y., a daughter, Michael Keith, Dec. 15, 1944.

To Capt. (I.S.C., '43), V.C., and Mrs. Jack W. Hylton, Veterinary Station Hospital, Presidio of San Francisco, Calif., a boy, Richard Roy, Dec. 18, 1944.

To Capt. (Colo., '42), V.C., and Mrs. Bernard H. Skold, Surgeon's Office, Hq. Ninth Service Command, Fort Douglas, Utah, a daughter, Karen Ellen, Jan. 29, 1945.

To Lt. (A.P.I., '43) and Mrs. P. D. Fichandler, P. O. Box 554, Gainesville, Ga., a son, Joseph Burton, Feb. 17, 1945.

To Major (Colo., '34) and Mrs. Karl H. Willers, 38-30 Douglaston Parkway, Douglaston, L. I., N. Y., a daughter, Virginia Sue, March 15, 1945.

To Capt. (Corn., '41) and Mrs. Morton Meisels, Office of the Port Veterinarian, New York Port of Embarkation, 1st Ave. & 58th St., Brooklyn, N. Y., a son, Peter Alexander, March 24, 1945.

To Dr. (Wash., '40), and Mrs. Harry V. Sucher, 5701 H St., Sacramento, Calif., a daughter, Cynthia, March 25, 1945.

To Dr. (M.S.C., '40) and Mrs. William G. Magrane, Route 2, Mishawaka, Ind., a daughter, Nancy Jo, March 31, 1945.

To Dr. (A.P.I., '41), and Mrs. W. C. Haire, 200 Morgan St., Tampa, Fla., a son, Richman Wilbur, April 3, 1945.

#### **DEATHS**

Mrs. H. S. Akin, Hanford, Calif., died suddenly following a heart attack. She was active in the affairs of the Central California Veterinary Medical Association.

Norton Dock (O.S.U., '03), 62, Cincinnati, Ohio, died Jan. 18, 1945. Dr. Dock had been a member of the AVMA since 1916.

Charles H. Elliott (C.V.C., '18), 52, died March 18, 1945. The funeral and burial were at Mt. Carroll, Ill., his former home. Major Elliott was admitted to the AVMA in 1942.

A. L. Faunce (C.V.C., '05), 69, Franklin, Neb., died April 5, 1945. Dr. Faunce had been associated with the BAI for forty-six years, the last twenty-three as resident inspector on virus-serum control work. He joined the AVMA in 1918.

William F. Gross (Ny-Amer., '05), 63, Denver, Colo., died Dec. 24, 1944. Dr. Gross had been a member of the AVMA since 1939.

S. E. Houk, Muscatine, Iowa, died of a heart attack on Feb. 14, 1945. He was a member of the Eastern Iowa Veterinary Medical Association.

A. J. Kline (Ont., '94), Wauseon, Ohio, died April 21, 1945. Dr. Kline was admitted to the AVMA in 1899.

Charles G. Lamb (Mont., '85), Beverly Hills, Calif., died March 27, 1945. Dr. Lamb had been a member of the AVMA since 1904.

Hugh M. Lovett (O.V.C., '22), 48, Eureka, Kan., died March 3, 1945. He had made his home in Eureka since childhood and returned there to practice after graduation. He was admitted to the AVMA in 1942.

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George U. Marchand (Ont., '05), 62, Uhrichsville, Ohio, died suddenly on Jan. 24, 1945. Dr. Marchand had been a member of the AVMA since 1936.

John E. Thompson (O.V.C., '19), 48, Columbus, Ohio, died in November, 1944. Dr. Thompson had been a member of the AVMA since 1928

# THE VETERINARY PROFESSION AND THE WAR

#### Diseases Keep Out-Army Veterinarians at Work

Colonel Wayne C. Kester (Kan. '31) chief veterinarian of the Army's Pacific Ocean areas, and also of the Central Pacific Base Command, has in his office a map of the Pacific Ocean and Orient, with colored pins designating the animal diseases on the islands of his far-flung command. It is the job of Colonel Kester and the numerous veterinary officers of his service to eradicate these animal diseases wherever they may be found, and to prevent them from spreading to Hawaii and the United States. Hawaii is free from 23 serious animal ailments prevalent in the Asiatic-Pacific area. Many are unknown in the United States also, and for this ignorance we owe thanks to the veterinary service which has worked hard to avoid the importation of these infections.

Much of the credit for keeping the territory disease-free must go to the territorial quarantine laws and the able men who enforce them. The Army has merely continued and extended the work of the local authorities, the Colonel said. Veterinary officers and their enlisted assistants render professional services on thousands of animals, including pack mules, horses, war dogs, signal corps pigeons, and governmentowned livestock, as well as to service pets, which include a lion cub, a monkey, and a wildcat. Specially qualified veterinary teams are sent forward into new areas to assist Island veterinarians in animal-disease investigation and control. These men determine the presence in occupied areas of disease among livestock that may affect the health of troops or local food production. When necessary, they institute quarantine procedures.

Care of animals is only a portion of the work, for the inspection of foodstuffs is time-consuming and exacting in Pacific Ocean areas. That this work is efficiently done all along the line is attested by the fact that only about 1/4 of 1 per cent of all foods of animal origin received in the Hawaiian area since the start of the war has been condemned as unfit for human food, and there has been no outbreak of food-poisoning or sickness due to troops having been issued unsound foods.

Technicians, working under veterinary officers, operate about 50 cold storage plants and ration dumps in the Central Pacific Base Command alone. Veterinarians are also engaged as inspectors in food-producing establishments, and still others are stationed in reclamation centers where damaged food is handled. A few work along the waterfront inspecting ships as they load and unload. All Base Commands in Pacific Ocean areas operate in a similar manner, and a large inspection force of veterinary officers and men are stationed throughout New Zealand, where millions of pounds of food of animal origin are inspected and procured for our armed forces each month.

Just to round out the picture, Colonel Kester and his staff are charged with keeping fully oriented on the local agricultural industry, the dairy situation, livestock feed shortages, and local veterinary problems. The veterinary corps works so efficiently that the Army's veterinary program, though little publicized, becomes one of the most valuable projects of the war.

# Veterinary Officer in Key Position Cited for Meritorious Service

Below are certified copies of two citations awarded to Colonel Clell B. Perkins, native of Ohio, who fills a key position with the Veterinary Corps in France. During World War I, he was division veterinarian of the Thirty-fourth Division, A.E.F., with the rank of major.

#### LEGION OF MERIT

Colonel Clell B. Perkins, 0-8678, V.C., United States Army, for exceptionally meritorious conduct in the performance of outstanding service as Army Veterinarian, Third United States Army, from March, 1941 to March, 1944. By his untiring personal efforts and technical ability, Colonel Perkins effected the successful establishment of a system of training of all military personnel concerned directly or indirectly with the utilization of the army ration. Working untiringly, he was able to inspire all with whom he came in contact with the importance of the correct preparation and utilization of the army ration. By his superior technical knowledge, he contributed largely to the morale and health of the command.

#### BRONZE STAR MEDAL

Colonel Ciell B. Perkins, 0-8678, V.C., United States Army, for meritorious service in connection with military operations against an enemy of the United States. During the period 23 March, 1944 to 23 August, 1944, Colonel Perkins, in addition to his normal duties as Veterinarian, Third United States Army, served as president of general courts-martial appointed by Commanding General, Third United States Army, for the trial of more than thirty cases, both in England and on the continent of Europe. As president of these courts, Colonel Perkins, through his broad experience, performed valuable service and contributed appreciably to the maintenance of discipline and good order within the command.

#### Veterinary Inspection Unit Has Unique Record

The 101st Veterinary Food Inspection Detachment (former Veterinary Section "K"), shown in the accompanying photograph, is one of the few if not the only unit of its size or kind to maintain all of its original personnel after the



101st Veterinary Food Inspection Detachment

Back row (left to right): Capt. Herbert E. Viergutz, Cleburne, Kan.; Sgt. Leland F. Crook, Springville, Calif.; S/Sgt. Clarence K. Burton, Chicago, Ill.; T/5
Lawrence L. Longie, Walhalla, N. Dak.
Front row (left to right): T/5 Howard E. Autrey,
Smithfield, Texas; T/3 Leslie D. Allen, Tremonten,
Utah; Cpl. Lloyd V. Davies, Pershing, Iowa; Pfc. Ernest
E. Heck, Vinemont, Ala.

vicissitudes of service with the Army Air Corps in New Guinea, the Dutch East Indies, and the Philippine Islands. In addition, the unit has seen duty in Australia, and in the Philippines helped to hold a sector in a forward combat area for twenty-four hours during a paratroop attack.

In addition to its regular duties of food sanitation, the detachment, under the leadership of its C.O., Capt. H. E. Viergutz (Colo., '39), has rendered all kinds of veterinary service to the

pets and mascots of the troops and has helped native livestock owners with animal disease problems in the various areas to which it has been assigned.

#### Seine Section Veterinary Chief Promoted

Donald J. Francisco (M.S.C., '38) of Dearborn, Mich., who is chief of the Veterinary Division of the Seine Section in the Paris area, was recently promoted to the rank of major in the Veterinary Corps. Major Francisco entered the service in April, 1942, as a first lieutenant and served in general depots and ports in the United States before being sent to England about a year and a half ago. There he was assigned to the staff of the office of the chief surgeon. In his present capacity, he is advisor to the surgeon in the Seine Section in all matters pertaining to the veterinary service and has a staff of veterinary officers and enlisted technicians stationed in Q.M. depots, cold storage plants, general hospitals, and the famed Pasteur Institute.

#### Two Veterinary Corps Officers Awarded Chinese Honor Medal

Captain Frederick C. Cairns, (Corn., '31) St. Johnsville, N. Y., and Captain John Sheehan, (Wash., '43) of Renton, Wash., were recently awarded the Chinese Grand Star of Honor medal for outstanding and distinguished services rendered by them to the Republic of China and to the Chinese Army, according to information received from the public relations officer of the Chinese Combat Command, U. S. Army. The awards were made on recommendation of the Chinese general officer commanding a unit with which these American veterinary officers were on duty for an extended period.

The mission of the Chinese Combat Command is to advise and assist Chinese forces in prosecuting aggressive warfare against the Japanese. This liaison is concerned primarily with the planning and execution of field training and tactical operations, and with the receipt, distribution, and assignment of American equipment and supplies for Chinese military units. As members of the CCC, under Major General R. B. McClure, Captain Cairns and Captain Sheehan had been engaged primarily in teaching Chinese troops the methods of modern warfare.

The national fall pig goal is 37 million, or 18 per cent more than last fall. Support prices have been raised from \$12.50 to \$13.00 for good to choice butcher hogs weighing up to 270 lbs. This support price will not be lowered again before Sept. 1, 1946.—WFA.

# TO THE AMERICAN PEOPLE: Your sons, husbands and brothers who are standing today upon the battlefronts are fighting for more than victory in war. They are fighting for more than victory in war. They are fighting for more than victory in war. They are fighting for more than victory in war. They are fighting for a new world of freedom and peace.

We, upon whom has been placed the responsibility of leading the American forces, appeal to you with all possible earnestness to invest in war Bonds to the fullest extent of your capacity.

Give us not only the needed implements of war, but the assurance and backing of a united people so necessary to hasten the victory and speed the return of your fighting men.

Doughas Niem hour (M. Nimes)

urnal of the American Veterinary Medical Association

ME CVI, NUMBER 819

**JUNE 1945** 

TABLE OF CONTENTS, PAGE II



